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Ely Proposed Resource Management Plan/Final Environmental Impact Statement

Volume II (Chapters 4, 5, and 6) November 2007

BLM

Ely Field Office / Nevada

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

BLM Mission Statement

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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Cover Photo: Cottonwood Canyon – Fortification Range Wilderness, Lincoln County, Nevada. Ely BLM photo. May, 2002.

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4.0 ENVIRONMENTAL CONSEQUENCES

How to Read Chapter 4.0

Chapter 4.0 presents the impacts to the natural and human environments from the implementation of the alternatives presented in Chapter 2.0. The basic organization of Chapter 4.0 follows the categories and subcategories that have been used throughout this RMP/EIS, with five alternatives discussed under each. The chapter contains the following major components:

- Introduction – including types of effects to be addressed, BLM's critical elements of the human environment, assumptions for analysis, and incomplete and unavailable information.
- Impacts by category – including impact issues, assumptions, interactions with other programs, and impacts for each management goal by alternative.
- Cumulative impacts – including assumptions, interrelated projects, and impacts by category.
- Potential mitigation and monitoring.
- Unavoidable adverse environmental effects.
- Several other required sections as detailed in the table of contents.

The tools and techniques that are presented in Appendix G could be utilized by the Ely Field Office regardless of which alternative is selected (common to all alternatives). Where appropriate, the environmental effects of these tools and techniques are discussed at the beginning of a resource program that could be affected by their use. The first section of this appendix looks at the tools and techniques that could be used for vegetation treatment. This is followed by those that could be used to achieve other management goals. Since the tools and techniques are so numerous, they have been grouped into categories that would have similar effects (e.g., mechanical treatment, chemical treatment).

The paragraph summarizing interactions with other programs at the beginning of each section indicates which resource programs may interact with the program that is the topic of the section. If no interaction is indicated, the other program will not be discussed further in the section. The discussion of impacts for each alternative begins with the program specific impacts; e.g., what impacts would the wildlife management direction have on wildlife. This is followed by a discussion of the interactions between the management direction for other programs and the topic of the section; e.g., what impacts would mineral development have on wildlife. In reading each section, it is important to maintain a clear understanding of the direction of the interaction analyses; i.e., how do other programs affect the program being considered, not how does the program being considered affect other programs.

For ease of reading, impacts from the management actions of the Proposed RMP are presented first. Analysis that is presented for the Proposed RMP may be referenced in the following alternatives with such statements as “impacts would be the same as (or similar to) the Proposed RMP” or “impacts would be the same as the Proposed RMP except for ...,” as applicable. Since best management practices and other mitigating measures have been incorporated into the basic structure of the alternatives, many potential impacts have been reduced or eliminated “up front.”

All maps referenced in Chapter 4.0 are presented in the separate Map Volume.

4.1 Introduction

This chapter describes the environmental consequences that would result from the implementation of the management actions contained in the Proposed RMP, the No Action Alternative, and three other action alternatives. The analysis of impacts associated with the alternatives is required by BLM planning regulations and by the Council on Environmental Quality Regulations for implementing NEPA. The analysis presents best estimates of impacts. When quantitative information is available (frequently through geographic information system analysis), numerical values or ranges are presented. However, since many of the management actions presented for the alternatives are programmatic in nature, impacts are frequently described in qualitative terms, relying on best professional judgment. Impact analyses and conclusions are based on interdisciplinary team knowledge of the resources and conditions within the planning area, information collected by the Ely Field Office and other agency resource specialists, and published and unpublished literature, including information available on internet web sites. Chapter 3.0 presents the characteristics of the affected environment that were considered during impact analysis. Assumptions for analysis also have been developed to facilitate impact analysis (see Section 4.1.3).

4.1.1 Types of Effects to be Addressed

As specified in the Council on Environmental Quality guidelines for implementing the NEPA contained in the Code of Federal Regulations, three types of effects are discussed in this EIS and each is described below.

- “Direct effects, which are caused by the action and occur at the same time and place.” (Title 40 Code of Federal Regulations Subpart 1508.8).
- “Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” (Title 40 Code of Federal Regulations Subpart 1508.8).
- “Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (Title 40 Code of Federal Regulations Subpart 1508.7).

The impact discussion is subdivided by resource program, but each program would not be subject to each type of impact. Potential mitigation and monitoring and unavoidable adverse environmental effects are discussed at the end of the chapter.

4.1.2 Summarize Critical Elements of the Human Environment

The BLM's NEPA Handbook (H-1790-1) requires that all EISs address certain Critical Elements of the Human Environment. The list of elements contained in the handbook has been expanded by BLM Instruction Memoranda and Executive Orders. These critical elements are presented below along with the location in this chapter where the element is discussed. If the element does not occur within the planning area, or if it occurs, but would not be affected by the management actions being analyzed, this is indicated below and the element is not discussed further in the EIS. This elimination of non-relevant issues follows the Council on Environmental Quality guidelines as stated in Title 40 Code of Federal Regulations Subpart 1500.4. Critical issues affect by management actions are discussed within this document (e.g., see Section 4.18 for discussion of impacts from proposed withdrawals).

From BLM NEPA Handbook (H-1790-1):

- Air Quality – Section 4.2
- American Indian Religious Concerns – Section 4.25
- Areas of Critical Environmental Concern – Section 4.22
- Cultural Resources – Section 4.9
- Farm Lands (prime or unique) – Prime or unique farmlands occur within the decision area, but are limited in their extent. These soils are not currently used for production agriculture within the decision area.
- Floodplains – Section 4.3
- Threatened or Endangered Species – Section 4.7
- Wastes, Hazardous or Solid – Section 4.27
- Water Quality (Surface and Ground) – Section 4.3
- Wetland/Riparian Zones – Section 4.5
- Wild and Scenic Rivers – No designated wild and scenic rivers or rivers with wild and scenic characteristics have been identified within the planning area.
- Wilderness – Section 4.22

Added subsequent to Handbook:

- Environmental Justice – Section 4.26
- Invasive, Nonnative Species – Section 4.21
- Migratory Birds – Section 4.6
- Statement of Adverse Energy Impact – Section 4.37

4.1.3 Assumptions for Analysis

Where specific information is not available for a resource program, it is necessary to formulate reasonable assumptions with which to facilitate the impact analyses. General assumptions are presented below, while program-specific assumptions are presented at the beginning of each subsection. These assumptions should not be interpreted as constraining or redefining the management actions described for each alternative in Chapter 2.0.

- Existing state and federal environmental legislation and regulatory programs would remain relatively unchanged and in effect (i.e., analyses are based on current, rather than projected, future regulations).

- For purposes of the EIS analysis, the underlying assumptions are first that ongoing natural and human-related changes would continue in vegetation communities in the absence of management intervention, and second, that the successful application of treatments developed for a specific watershed would result in the maintenance or establishment of the desired range of conditions for the major vegetation communities in approximately the desired proportions. Thus, the planned management actions would increase vegetation and habitat resilience beyond that existing prior to the treatment.

- For impact analyses, short term is generally defined as being less than 10 years and long term as being greater than 10 years unless otherwise noted for a specific resource. Each resource would explain the differences in impacts within these periods as appropriate. The short-term period may be less than 10 years if a resource being managed would respond in less time (such as specific treatments for wildlife species or their habitats). The length of the long-term period also could vary by resource. For example, recreation may need to discuss impacts out to 20 years, while vegetation may need to discuss impacts out to 50 to 100 years.

- For impact analysis, it has been assumed that best management practices (see Appendix F) would be implemented wherever appropriate. Best management practices would be implemented at the discretion of the Ely Field Office on a project-specific basis, depending on the specific characteristics of the project area and the types of disturbance being proposed. They may not be appropriate to implement in all cases.

- Alternative D would exclude all permitted, discretionary uses of the public lands including livestock grazing, mineral sale or leasing, lands and realty actions (such as disposals, leases, rights-of-way), recreation uses requiring permits, etc. Some components of Alternative D could be implemented through the discretionary authority of the Ely Field Manager or the Nevada State Director, while others would require action by the Secretary of the Interior or new legislation by Congress. For impact analysis, it has been assumed that the necessary authorizations or legislative changes would be made to allow implementation of Alternative D as described in Section 2.8.

4.1.4 Incomplete or Unavailable Information

The best available information pertinent to the decisions to be made in the Ely RMP/EIS was used to develop and evaluate alternatives. As is always the case when developing management actions for a wide range of resources, not all information that might be desired was available. The discussions below highlight the areas where information is incomplete or unavailable and the approach taken to allow impact analysis to proceed based on the information that is available. The primary effect of unavailable information is the inability to quantify certain impacts. Where quantification was not possible, impacts have been described in qualitative terms. The Council on Environmental Quality Regulations provide direction on how to proceed with the preparation of an EIS when information is incomplete or unavailable:

“If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement: 1) a statement that such information is incomplete or unavailable; 2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; 3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and 4) the agency’s evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, “reasonably foreseeable” includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.” (Title 40 Code of Federal Regulations Subpart 1502.22 b).

A range of data types and qualities for resources in the planning area was available for the analysis of the impacts of the management actions contained in the five alternatives presented in the Ely RMP/EIS. Since the alternatives contain primarily programmatic management, the question of data completeness and quality is less important than would be the case for site-specific actions. Data adequacy would be a primary consideration of the Ely Field Office during watershed analyses and for analyzing and monitoring of site-specific actions.

4.1.4.1 Vegetation Treatment and Watershed Management

- Incomplete Information – Certain descriptive information for vegetation in the planning area, which relates to watershed management, is incomplete and unavailable. Key items within the information that are incomplete are soil surveys for about 1.2 million acres of the planning area and existing vegetation composition and resiliency in the various Great Basin and Mojave Desert vegetation communities.

- Relevance of Incomplete Information – An impediment to completing watershed analyses is the lack of detailed soils information that is collected by the Natural Resources Conservation Service. It would be necessary to treat portions of the vegetation in each watershed to restore resiliency. The incomplete information relates to the number of acres that would need to be treated for each vegetation type and the tools and techniques that would be used for treatment, based primarily on topography and resource objectives. Selection of appropriate tools and techniques for individual treatment situations would be based on the available knowledge at that time. This knowledge base would continue to grow with the use of the adaptive management process, leading to improved treatment success, through and beyond the life of this plan.

- Summary of Existing Information – Of the 61 watershed management units that exist in the planning area, watershed analyses are being conducted for nine. The remaining high-priority watersheds would be analyzed over the next 10 years. Soil surveys are complete on 10.3 of the 11.5 million acres of the planning area. Vegetation composition and resiliency are available for about 2.5 million acres from ecological site inventory data and 600,000 acres from vegetation assessment using line-point intercept methods at a landscape scale. Soil survey information for unsurveyed acres should be available by the end of 2009.

- Approach to Evaluate Impacts – The Ely Field Office extrapolated the characteristics of vegetation for the entire planning area from ecological status inventory and cover data that are available for three watersheds in the Great Basin Desert and Southwest Regional GAP Analysis Project data in the Mojave Desert. Extrapolating characteristics of a large area from a smaller subset is a commonly accepted practice in landscape analysis, and this approach has allowed the Ely Field Office to analyze existing vegetation composition and resiliency. Each watershed analysis also would gather vegetation composition and resiliency as part of the watershed assessment phase. It is anticipated that an environmental assessment would be prepared for site-specific decisions stemming from watershed analyses. In addition, ongoing watershed analyses across the planning area would continue to update and refine data available for use in implementing this RMP.

- Conclusion – The incomplete vegetation, soils, and watershed information for the entire 11.5 million acres of the planning area could not be obtained for use in the RMP/EIS analysis within a reasonable timeframe, estimated at 20 years given current funding levels, without an exorbitant cost.

4.1.4.2 Condition of Vegetation Communities

- Incomplete Information – While it is generally accepted by the scientific community that some vegetation conditions in the Great Basin are deteriorating (including reduction of species diversity, loss of perennial understory grass and forb species, increase in abundance of invasive annual species, and/or increase in density of woody species), quantitative information on the rate of this deterioration, especially within the planning area, is not available. While much is known about the general situation, much additional inventory, assessment, monitoring, and research is needed to gain greater certainty about specific watersheds and areas, as well as the effectiveness of some management treatments.

- Relevance of Incomplete Information – The rate of change in vegetation communities would have a direct bearing on the rate of vegetation treatment that would be necessary in order to prevent or reverse undesirable changes.

- Summary of Existing Information – Information on vegetation condition and trends is presented in Sections 3.5 and 3.19. Some general information exists on the rate of vegetation change; for example, pinyon-juniper expansion removes most of the understory shrubs in 4 to 5 decades after the tree seedlings become established. Once invasive weed populations become established in small areas, they can increase so quickly that they can become economically or ecologically beyond eradication within a few years.

- Approach to Evaluate Impacts – The influence of change in vegetation communities has been incorporated into impact analysis based on the number of acres within the decision area that require some type of vegetation treatment over the next 50 to 100 years. It has been assumed that change would continue in the absence of intervention, without specifying a rate. Therefore, for plant community health attributes that are fire dependent, the normal fire return interval provides guidance (see **Table 3.20-2**).

- Conclusion – The deterioration of vegetation communities in the planning area is a long-term process that has been ongoing for several decades and is likely to continue for many additional years or decades. The cost to obtain the incomplete information on the rate of deterioration of vegetation communities over the 11.5 million acres of the decision area during the RMP/EIS preparation would be exorbitant.

4.1.4.3 State and Transition and LANDFIRE Biophysical Setting Models

- Incomplete Information – State and transition models are an important part of the watershed analyses that would be conducted as part of the management of the planning area (please see Section 3.5.3 and Appendix C). However, models have not been completed for all the vegetation types (ecological sites) found in the planning area.

- Relevance of Incomplete Information – State and transition models are relevant in determining desired future conditions and estimating the number of acres to be treated. State and transition models and their associated vegetation thresholds are helpful in evaluating data collected to assess the condition of watersheds and to help identify the appropriate types of treatments required to maintain or return a watershed to ecological health.

- Summary of Existing Information – Generalized draft working models (approximations) are available for major key vegetation types within the planning area including Wyoming big sagebrush, black sagebrush, mountain big sagebrush, winterfat, shadscale, curlleaf mountain mahogany, and pinyon-juniper forestland ecological sites. LANDFIRE biophysical setting models also are available (see http://www.landfire.gov), and as soils inventories are completed, there may be additional ecological site models developed concurrent with, and after the preparation of, this RMP/EIS.

- Approach to Evaluate Impacts – In the absence of output from a complete set of models, the Ely Field Office has estimated the number of acres (by major vegetation type) that would need to be treated across the planning area and discussed the general types of treatment that may be appropriate. These estimates would be refined as additional data and models become available. LANDFIRE biophysical setting models would be used as a supplement to ecological site descriptions in determining the desired range of conditions in various vegetation communities. To achieve the desired states for any alternative, intensive coordination among the various resource management programs would be needed.

- Conclusion – State and transition models currently are being developed for the ecological sites found in the planning area by parties outside the BLM and they would be available for watershed analysis. Even if it were possible to accelerate the preparation of these models, the cost to complete all the models during the RMP/EIS preparation would be exorbitant.

4.1.4.4 Bighorn Sheep and Domestic Sheep and Goat Interactions

- Incomplete Information – The transference of disease from domestic sheep and goats to bighorn sheep is a matter of debate among wildlife specialists, game management agencies, and the livestock industry. The relevance of the incomplete information is to provide site-specific data to support implementation of the Revised Guidelines for Management of Domestic Sheep and Goats in Native Wild Sheep Habitats, which would protect desert bighorn sheep but impact livestock grazing.

- Relevance of Incomplete Information – Conclusive information, especially from studies conducted in the planning area, would end the debate on the transference of disease from domestic sheep and goats to bighorn sheep.

- Summary of Existing Information – Approximately 1.2 million acres of Rocky Mountain bighorn sheep and desert bighorn sheep habitat (occupied and historic ranges, and migration corridors) occurs within existing domestic sheep and goat grazing allotments. It has been reported from past studies that domestic sheep may have been the main vector of disease transference to bighorn sheep, which resulted in the decimation of bighorn sheep populations in isolated areas of the western U.S. Based on a recent literature review regarding the compatibility between bighorn sheep and domestic sheep (Martin et al. 1996), contact between bighorn sheep and domestic sheep in both fenced studies and free-ranging herds resulted in the death of all or most of the bighorn sheep while the domestic sheep were not affected. In addition, there were no studies where bighorn sheep came into contact with domestic sheep and remained healthy. The major pathogen responsible for the death of bighorn sheep after contact with domestic sheep is *Pasteurella haemolytica*.

- Approach to Evaluate Impacts – Even though there is still debate on this issue and additional research is ongoing, management direction and impact analysis contained in this RMP/EIS is based on the potential for conflicts between the species. Since domestic sheep utilize similar resources to bighorn sheep within the planning area, and because domestic sheep may be a primary disease vector to bighorn sheep populations in the planning area, exclusion of livestock (i.e., domestic sheep and goats) from occupied and historic ranges of bighorn sheep would improve overall health of bighorn sheep populations and habitat quality for bighorn sheep populations in the planning area.

- Conclusion – While there are no studies on the interaction of bighorn sheep and domestic sheep or goats specific to the planning area, there is enough information to allow for a reasoned choice among alternatives. The Revised Guidelines for Management of Domestic Sheep and Goats in Native Wild Sheep Habitats are based on numerous research projects and case studies that show bighorn sheep are adversely affected when they come into contact with domestic sheep and goats. It was determined that implementation of the revised guidelines should occur.

4.1.4.5 Special Status Species

- Incomplete Information – Site-specific information is lacking for many of the special status species listed in Appendix E.

- Relevance of Incomplete Information – During implementation of this RMP, site-specific information is necessary for accurate impact analysis in support of proper habitat management for special status species. The programmatic analysis in this RMP/EIS can be completed without the site-specific information.

- Summary of Existing Information – A variety of information exists for special status species (Section 3.7 and Appendix E).

- Approach to Evaluate Impacts – An assumption was made for impact analysis in this programmatic RMP/EIS that the site-specific information would be collected during implementation of this RMP. Impacts to special status species would be evaluated during the watershed analysis process and through project-specific NEPA analysis.

- Conclusion – The cost to collect site-specific information on all special status species over 11.5 million acres of public land in the planning area would be exorbitant, and is not necessary for the level of analysis in this programmatic RMP/EIS.

4.1.4.6 Paleontological Sites

- Incomplete Information – Detailed inventories to locate all paleontological sites of scientific value that may occur in the planning area have not been conducted.

- Relevance of Incomplete Information – Site location and significance information is necessary for identifying conflicts between paleontological sites and the management and use of other resources.

- Summary of Existing Information – Information on previously identified paleontological sites is presented in Section 3.10. There are relatively few sites of notable scientific value identified in the planning area.

- Approach to Evaluate Impacts – Impacts were evaluated based on the location and quality of known sites. Management would apply to newly discovered sites as well as known sites. Therefore, impacts to known sites are a good measure of potential impacts to unknown sites.

- Conclusion – The cost to collect location and significance information for paleontological sites on 11.5 million acres of the planning area during the RMP/EIS preparation would be exorbitant.

4.1.4.7 Historic Fire Return Intervals – Riparian

- Incomplete Information – Data on the historic fire return interval for the riparian vegetation community is not available.

- Relevance of Incomplete Information – The plants that occur in riparian areas are typically less susceptible to the start of fires, and the linear nature of many riparian areas does not facilitate the propagation of fires. Fires occur in riparian areas with less frequency and are less severe than fires in drier upland areas in the planning area.

- Summary of Existing Information – Historic fire return intervals for vegetation communities in the planning area are discussed in Sections 3.20.1 and 3.20.2. Intervals range from about 20 to 200 years, depending on vegetation type.

- Approach to Evaluate Impacts – Due to the lower probability of fires in riparian areas, impact analysis was based on fire return intervals for upland areas where data are available, but the historic return interval is probably similar to that of the adjacent upland areas where most of the fires affecting riparian areas would have originated.

- Conclusion – Fire return intervals are based on historic data that have not been recorded for riparian areas. Thus, there is no means to obtain these data.

4.1.4.8 Contaminated Sites

- Incomplete Information – There is the potential that contaminated sites associated with mining, landfills, illegal dumping, and drug labs exist in the planning area where a threat to human health has not yet been characterized.

- Relevance of Incomplete Information – Contaminated sites are handled by the Ely Field Office as a hazard or health risk when identified, according to the requirements of existing laws and policies. Thus, until a site is identified, no action can be taken.

- Summary of Existing Information – Two contaminated sites are currently being managed in the planning area (see Section 3.27).

- Approach to Evaluate Impacts – Since all contaminated sites are managed according to the existing laws and policies, impacts associated with the management of known sites are a good measure of potential impacts associated with unknown sites.

- Conclusion – The cost to identify and characterize contaminated sites over the 11.5 million acres of the planning area during the RMP/EIS preparation would be exorbitant.

4.1.4.9 Interrelated Projects

- Incomplete Information – An extensive list of interrelated projects has been assembled for consideration in the cumulative impacts analysis (see Section 4.28, **Table 4.28-1**). In an attempt to make the list as comprehensive as possible, six reasonably foreseeable future actions (Lincoln County Land Act development; actions under the Lincoln County and White Pine County Conservation, Recreation, and Development Acts; water development in White Pine County; water development in Lincoln County; and Coyote Springs residential development) were included for which there is limited information. The unavailable information relates to ongoing water demand and permanent employment for the projects.

- Relevance of Incomplete Information – The unavailable information is relevant to the cumulative impacts to groundwater resources and economic growth in the counties that make up the planning area.

- Summary of Existing Information – While these projects are in the discussion stage, specific development plans have not been completed. The projects were included in the list to capture their anticipated surface disturbance, but specific information on water demand and employment does not exist. Because advancement of the projects requires decisions or actions by entities outside the Ely Field Office, including private developers and the Nevada State Engineer, the Ely Field Office knows of no means to obtain the unavailable information.

- Approach to Evaluate Impacts – The basic approach to the cumulative impacts analysis was to establish an order of magnitude for the impacts of the interrelated projects on air emissions, surface disturbance, water demand, and employment. It is believed that the unavailable information on water demand and employment would not substantially increase the totals for these two categories (about 400,000 acre-feet per year and 1,500 employees, respectively). Therefore, cumulative impact analysis proceeded without the information.

- Conclusion – Since many of the interrelated projects are in the early planning stage and projects may not be at the permitting stage for 2 to 5 years, there is no means to obtain detailed project description information from the outside parties.

4.1.5 Comparison of Impacts by Alternative

Table 4.1-1, which follows, presents a comparative summary of the primary impacts to each resource program for each of the five alternatives analyzed in detail in Chapter 4.0. The detailed discussion of impacts begins in Section 4.2.

Table 4.1-1
Summary Comparison of Impacts

AIR RESOURCES	
Goal – Meet all applicable local, state, and tribal constraints, and National Ambient Air Quality Standards under the Clean Air Act (as amended), and prevent significant deterioration of air quality (defined as violation of air quality regulations) within the Ely planning area from all direct and authorized actions.	
Proposed RMP	Under the Proposed RMP, as watershed analyses are completed and projects are implemented to meet or maintain rangeland health standards, fire management would expand as a tool in vegetation management to approximately 8.9 million acres. In the long term, this approach likely would result in more small fires and fewer major fires producing fewer emissions in the planning area compared to recent historic (last 30 years) levels. Short-term impacts could include larger and more frequent fires plus increased fugitive dust from recreational events impacting air quality. Mitigation measures would be applied where appropriate to help maintain air quality. In the long term, the Proposed RMP would meet the goal of the air resources program and maintain compliance with federal and state air quality standards.
Alternative A	Short-term impacts of fugitive dust from recreational events and smoke emissions from larger and more frequent wildfires would impact air quality. In the long-term, implementation of the existing Ely Fire Management Plan, which incorporates the Ely Managed Natural and Prescribed Fire Plan, would not reduce the smoke emissions from wildfires as much as in the Proposed RMP. Alternative A would meet the goal of the climate and air quality program in the short term, but would not meet the goal over the long term.
Alternative B	This alternative would likely result in the same impacts as the Proposed RMP. Alternative B would meet the goal of the climate and air quality program.
Alternative C	In the short term, air quality impacts from fire could be lessened over the present. In the long term, air quality is likely to be impacted by increased recreation activity in comparison to the Proposed RMP and greater numbers of large-scale fires producing more emissions. Alternative C would not meet the goal of the climate and air quality program.
Alternative D	Air quality would be impacted in both the short term and long term by an increased probability for occurrence of large-scale fire events. Alternative D would not meet the goal of the climate and air quality program.
WATER RESOURCES	
Goal – The quality of water resource on public lands administered by the Ely Field Office will be suitable for the appropriate beneficial uses and will meet approved federal, state, tribal, and local requirements, guidelines, and objectives. The quantity of water on public lands administered by the Ely Field Office will be suitable to meet public land management purposes. **Northeastern Great Basin Resource Advisory Council Standard. Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.**	
Proposed RMP	Water resource conditions would be improved on a long-term basis as individual watersheds are analyzed and treated. During the short term, localized decreases of water quality may occur immediately following treatments. The potential for these effects would be minimized by the use of best management practices during the treatment process. Increases in water availability (mainly springflows and baseflows) may occur in local areas conducive to groundwater recharge and discharge. This alternative provides a suitable management framework to achieve the goals of the water resources program, including proper functioning condition of wetlands and riparian areas, and achievement of state water quality standards.
Alternative A	Since restoration currently does not keep pace with the decline in ecological trends, groundwater recharge and seasonal surface water flows would be expected to decline. Shorter term runoff events (e.g., thunderstorms, snowmelt) would continue to exhibit their current timing and volume, or may occur over shorter time scales and with somewhat larger volumes in watersheds where conditions continue to degrade. In general, water quality would continue to decline under Alternative A. Water consumption (primarily through evapotranspiration) would be expected to increase. This alternative does not provide a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.

Table 4.1-1 (Continued)

Alternative B	Water resource conditions would be improved on a long-term basis as individual watersheds are analyzed and treated. Major disturbance factors (i.e., grazing) would be removed over a large portion of the planning area. Similar to the Proposed RMP, policies and standards would be applied with selected tools and techniques that would further enhance water resource conditions over the long term. Localized, short-term increases in erosion and sedimentation may occur immediately following vegetation treatments. Such effects would be minimized by the implementation of best management practices during the treatment process. The substantially larger area of livestock closures under Alternative B would increase the likelihood of water resources improvements beyond those that would occur under the Proposed RMP. This alternative provides a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.
Alternative C	In general, long-term improvements in water quality and water resources availability for uses would occur as a result of intensive vegetation management under Alternative C. Increases in seasonal water availability (mainly springflows and baseflows) would occur in areas conducive to groundwater recharge and discharge. Water usage and water quality degradation may occur in some areas as a result of livestock grazing and increased recreational developments. Over the long term, these effects would be combined with rapid runoff, increased flooding, and greater sediment yield encouraged by the fire suppression approach under this alternative. This alternative does not provide a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.
Alternative D	In general, improvements in water quality and water resources availability for uses would not be extensive as a result of management under Alternative D. Small increases in seasonal water availability, primarily in limited areas conducive to groundwater recharge and discharge, would occur. More stable watershed conditions and water quality improvements would occur in the short term as a result of recreation and livestock management approaches. This would be offset by watershed deterioration due to heavy overuse by wild horses within the herd management areas as populations rapidly expand. Over the long term, however, these improvements would be overshadowed by the fire management approach under this alternative, which would lead to widespread major fires that ultimately encourage rapid runoff, flooding, and sediment yield. This alternative does not provide a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.
SOIL RESOURCES	
Goal – Maintain or improve long-term soil quality. **Northeastern Great Basin Resource Advisory Council Standard. Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and landform.** **Mojave/Southern Great Basin Resource Advisory Council Standard. Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.**	
Proposed RMP	Over the short term, the Proposed RMP would be expected to increase the risk of soil erosion and temporary loss of productivity on freshly treated areas. Implementation of best management practices, including restoration monitoring, would minimize these risks. Long-term reductions in erosion rates and increases in soil quality would be expected with successful widespread vegetation restoration and weed management. The Proposed RMP would achieve the stated goals for the soils program, including the Resource Advisory Council Standards.
Alternative A	Current soils impacts and accelerated erosion losses primarily result from changing ecological conditions within the planning area. Such factors include reduction in perennial herbaceous understory and widely scattered minor surface disturbances such as those resulting from concentrations of grazing animals, off-highway vehicle use, and various other human activities. Under Alternative A, the effects of accelerated erosion on soil resources would continue their current trends, and this alternative would fail to achieve the goals for the soils program, including the Resource Advisory Council Standards.
Alternative B	Under Alternative B, the scale of vegetation treatment would increase the short-term risk for accelerated erosion in the event of extensive soil disturbance or delays in restoration success. However, the implementation of best management practices, including restoration monitoring, would minimize this impact. On a long-term basis, the erosion potential of restored areas would be diminished, soil quality would be enhanced, and activities contributing to accelerated erosion and sedimentation would be reduced over much of the planning area. Restoration of vegetation resilience and return to historical fire regimes would result in reduced impacts to soils when fires occur. Alternative B would achieve the goals for the soils program, including the Resource Advisory Council Standards.

Table 4.1-1 (Continued)

Alternative C	Alternative C would involve substantial increases in terms of vegetation treatment. Thus, it would involve short-term erosion risk, but long-term improvement to soil stability and quality. Short-term impacts from management of vegetation and other resources would be minimized by best management practices. Long-term reductions in accelerated erosion may be limited by the emphasis on commodity production. Alternative C would likely achieve the goals for the soils program over major portions of the planning area but may not sustain that achievement in the event of a major wildland fire. Thus, Resource Advisory Council Standards may not be met.
Alternative D	Alternative D would involve some increases in rates of vegetation treatment, but with a limited approach and treatment scale. It also would involve limited fire suppression. Thus, Alternative D would create long-term erosion risk, limit long-term benefits to soil quality from vegetation treatments, and enhance erosion risk from major fire events. Erosion-generating human activities such as off-highway vehicle use would be substantially reduced over much of the planning area, but benefits from limiting these more concentrated activities would likely be offset by more widespread increases in accelerated erosion from major wildland fires. Overall, this alternative is not expected to achieve the program goals in a sustained manner over the long term, including the Resource Advisory Council Standards.
VEGETATION RESOURCES	
Goal – Manage vegetation resources to achieve or maintain resistant and resilient ecological conditions while providing for sustainable multiple uses and options for the future across the landscape. **Northeastern Great Basin Resource Advisory Council Standard. Habitats – Exhibit a healthy, productive and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover, and living space for animal species and maintain ecological processes; habitat conditions meet the life cycle requirements of threatened and endangered species.** **Mojave/Southern Great Basin Resource Advisory Council Standard. Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.**	
Proposed RMP	The Proposed RMP would generally reduce dominance by woody species and increase the diversity of vegetation communities over the long term, providing vegetation communities with structure, multiple-aged shrubs, forbs, and perennial grasses. This would result in greater productivity, improved wildlife habitat, and improved natural functions and watershed stability. Livestock grazing management could be used to maintain vegetation communities which currently meet the desired range of conditions and allow improvement of remaining vegetation communities to the desired range of conditions over the short and long term. It also would increase the return of plant litter to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities with maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained across the landscape through the use of numerous tools. This alternative would achieve the program goal.
Alternative A	Existing management would lead to a moderate reduction in shrub-dominated communities and a reduction in pinyon/juniper-dominated communities over the long term. Moderate shrub reintroduction into burned sites, as part of rehabilitation efforts, would maintain diversity in the long term at a broad scale. The historic rate of treatment (largely fire rehabilitation) each year to restore desirable perennial herbaceous species and restore ecological resiliency would be increased to the extent allowed under the current fire plan. This rate, however, is not considered adequate to match the current rate of ecological deterioration, increase in woody fuel, and expansion of weedy species throughout the planning area, and substantial long-term effects are anticipated. Thus, this alternative is not likely to achieve the program goal.
Alternative B	Alternative B would generally reduce dominance by woody species and increase the diversity of vegetation communities over the long term, providing structure with multiple-aged shrubs, forbs, and perennial grasses. This would result in greater productivity and improved natural functions and watershed stability. Sustained or slightly reduced levels of livestock grazing would maintain vegetation communities which currently meet the desired range of conditions and allow improvement of remaining vegetation communities to the desired range of conditions over the short and long term. It also would increase the return of plant litter to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities, which includes maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained across the landscape, expect at small localized areas of soil disturbing activities. This alternative would achieve the program goal.

Table 4.1-1 (Continued)

Alternative C	Implementation of this alternative would reduce dominance of woody and exotic annuals species and increase dominance of herbaceous perennials in the long term. Greater productivity for allocation to consumptive uses would result. Limited shrub reintroduction into some burns would maintain diversity at a broad scale. However, the narrower range of desired conditions (with greater emphasis on the herbaceous state) in this alternative as compared to the Proposed RMP would require more effort and more frequent treatments to achieve and maintain. The higher probability for widespread fire over the long term also would necessitate greater efforts for fire suppression and rehabilitation as opposed to planned treatments. As a result of optimizing livestock use of available forage, the benefits of returning vegetation material to the soil would be minimized. Long term vigor and health of vegetation communities would be maintained across the landscape, except at localized areas of concentrated activity. This alternative has a high potential for achieving the program goal over the short term, but the sustainability of resilient ecological conditions over the long term is questionable.
Alternative D	Exclusion of livestock from all public land would allow natural succession to improve the condition of many vegetation communities currently supporting desirable species. Altered vegetation communities dominated by annual species would improve little toward the desired range of conditions over the life of the plan. Fine fuels would increase with limited utilization of herbaceous growth, resulting in increased size of wildland fire and increased occurrence and frequency of fire near frequent sites of ignition. Limited suppression of wildland fire would also increase the average fire size, resulting in more frequent impacts to affected vegetation resources. The condition of many vegetation communities currently dominated by desirable mosaics of native species would be maintained or improved in those areas not subject to frequent fire. Frequent wildland fires in healthy, native communities, would cause a decline in vegetation diversity and health, leading to decline in natural levels of nutrient, water, and energy cycling. This alternative would result in continued proliferation of tree species into historic sagebrush-dominated sites with minimal prospects for restoration of resiliency. Therefore, this alternative would fail to achieve the program goal.
FISH AND WILDLIFE	
Goal – Provide habitat for wildlife (i.e., forage, water, cover, and space) and fisheries that is of sufficient quality and quantity to support productive and diverse wildlife and fish populations, in a manner consistent with the principles of multi-use management, and to sustain the ecological, economic, and social values necessary for all species. **Northeastern Great Basin Resource Advisory Council Standard. Habitats exhibit a healthy, productive and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.** **Mojave/Southern Great Basin Resource Advisory Council Standard. Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.**	
Proposed RMP	Aquatic habitat management would include habitat enhancement for existing aquatic species. Vegetation treatments could result in increased short-term impacts from erosion and sedimentation immediately after treatment. These impacts would be minimized through implementation of management actions that would provide mitigation during the treatment process. Changes in grazing management in riparian areas and restoration of vegetation resilience in nearby riparian and upland areas would improve habitat conditions over the long term. By implementing the various management actions associated with the wildlife and fisheries management direction and mitigation actions associated with other programs, the goal and objective for fisheries would be achieved. There would be a loss of wildlife habitat on less than 5 percent of the planning area. Direct loss of habitat would occur as a result of land disposals and construction activities associated with energy production and mineral development. Indirect losses would occur through fragmentation of habitat and avoidance of areas adjacent to project sites during construction and operation activities. Mitigation of discretionary permitted activities that result in losses of aquatic habitat and priority wildlife habitat would occur by improving 2 acres of comparable habitat for every 1 acre disturbed as determined on a project-by-project basis. The quality of wildlife habitat, both aquatic and terrestrial, on the remaining 95 percent of the planning area would improve as a result of wildlife habitat management, wild horse management, livestock grazing management, off-highway vehicle management, vegetation management, watershed management, fire management, and noxious and invasive weed management.

Table 4.1-1 (Continued)

	Over the long term, the Proposed RMP would achieve the goal for the fish and wildlife management program. Because of the time required to implement the necessary vegetation treatments and other management actions, achievement of the goal for the entire area in the short term may not occur in the first few years. Site-specific locations may achieve the goals sooner due to the prioritization of treatments.
Alternative A	Aquatic species habitat management would focus on sustaining aquatic habitats by following Resource Advisory Council standards and guidelines. Other programs could continue to affect aquatic habitat as a result of sedimentation, vegetation removal, and habitat alteration due to surface disturbance. Upland areas would continue to degrade in terms of vegetation loss and erosion, which would indirectly affect riparian areas along streams and springs. Land and realty actions (e.g., rights-of-way or disposals) could involve subsequent changes in demand for either surface or groundwater resources throughout the planning area with resultant effects to aquatic habitat as a result of flow or water level changes. The long-term degradation of riparian vegetation and increased level of sedimentation from surface disturbance could result in the goal and objective for fisheries not being achieved. The loss of terrestrial wildlife habitat from various programs would be similar to the Proposed RMP. Improvement in the quality of wildlife habitat would not occur as quickly or to the degree it would under the Proposed RMP because fewer acres of the different vegetation types would be treated. In addition, most of the planning area would remain open to off-highway vehicle use. This alternative has a low probability of achieving the program goal over the long term.
Alternative B	Aquatic habitat management would result in maintenance and enhancement of habitat parameters involving riparian vegetation. Most of the same programs discussed in the Proposed RMP and Alternative A also could affect aquatic species habitat as a result of sedimentation, vegetation removal, or habitat alteration. Vegetation management would result in greater short-term impacts through erosion and vegetation removal as a result of increased treatment areas. On a long-term basis, these habitats would be improved from current conditions along with the improvement of vegetation resilience and ecological health in the nearby riparian and upland areas. Fish habitat could be improved in Meadow Valley Wash and Clover Creek due to the ACEC designations and elimination of wild horses, respectively. By implementing the various management actions associated with the wildlife and fisheries management direction and mitigation actions associated with other programs, the goal and objective for fisheries would be achieved. Fewer acres of terrestrial wildlife habitat would be lost under Alternative B because fewer acres of public land would be disposed of in the planning area. Improvement in the quality of wildlife habitat would be greater than under the Proposed RMP because an additional 3.6 million acres would be unavailable for livestock grazing. Wildlife habitat also would improve because the additional forage created as a result of restoration actions would not be allocated to livestock or wild horses, but reserved for watershed maintenance and wildlife. Overall, Alternative B would achieve the program goal.
Alternative C	In general, management actions would allow greater intensity of development, which would result in higher potential for sedimentation impacts on aquatic habitat. Increased sedimentation could affect aquatic habitat in the short term as a result of vegetation treatments and in the long term as a result of fire management. Watershed management could result in long-term improved habitat conditions in treated areas with an emphasis on recreation. Stream habitats in untreated areas would be jeopardized by increased risk of intense wildland fires. The potential for increased level of sedimentation from surface disturbance could result in the goal and objective for fisheries not being achieved in some drainages that support fisheries. Alternative C would have similar direct impacts to the quantity and quality of wildlife habitat from fish and wildlife management actions as the Proposed RMP, but impacts from other programs, particularly fire management, would differ substantially. Thus, on a long-term basis, Alternative C would probably fail to achieve the program goal.

Table 4.1-1 (Continued)

Alternative D	Aquatic habitat would not be actively managed, which could involve the elimination of fish populations in some water bodies. Greater impacts to aquatic habitat could occur due to uncontrolled wild horse population increases in herd management areas, increased dispersed recreation, and fire management with minimal fire suppression. Less short-term erosion would occur from vegetation treatment, but in the long term, erosion and sedimentation would be greater due to more intense fires. The goal and objectives for fisheries may not be achieved in some drainages because fish populations could be eliminated in some water bodies and habitat could be degraded on a long-term basis from increased sedimentation. The amount of terrestrial wildlife habitat lost as a result of lands and realty actions, renewable energy production, and mineral development under Alternative D would be minimal compared to the Proposed RMP. Improvement to wildlife habitat as a result of restoration actions would not occur except through limited fire use and weed treatment. The quality of wildlife habitat would be enhanced under Alternative D, at least in the short-term, because approximately 11.1 million acres would be closed to off-highway vehicle use, and because livestock grazing would be eliminated throughout the entire planning area. Habitat quality would probably deteriorate over the long-term due to increased fire effects throughout the planning area. This alternative would fail to meet the program goal because the habitat management under this alternative is not consistent with the principles of multiple use management and because the habitat quality achieved in the short-term would not likely be sustainable over the long-term with increasing fire risks.
SPECIAL STATUS SPECIES	
Goal – Manage public land to conserve, maintain, and restore special status species populations and their habitats; support the recovery of federally listed threatened and endangered species; and preclude the need to list additional species. **Northeastern Great Basin Resource Advisory Council Standard.** • **Habitats exhibit a healthy, productive and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover, and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.** • **Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria.** **Mojave/Southern Great Basin Resource Advisory Council Standard.** • **Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.** • **Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).**	

Table 4.1-1 (Continued)

Proposed RMP	Sensitive fish and invertebrate species would be managed through evaluations of their overall habitat conditions. Numerous resource uses could affect sensitive aquatic habitat as a result of sedimentation, vegetation removal, or habitat alteration. Changes in grazing management and restoration efforts in riparian areas could improve habitat conditions in the long-term, particularly in Lower Meadow Valley Wash ACEC and Condor Canyon ACEC. Vegetation management could result in greater short-term impacts through erosion and sedimentation as a result of increased treatment areas. On a long-term basis, the restoration of vegetation resilience in riparian areas and the surrounding uplands would improve habitat conditions for sensitive fish and invertebrate species. By implementing the various management actions associated with the special status species management direction and mitigation actions associated with other programs, the goals and objectives for special status aquatic species would be achieved. Special status wildlife species would be specifically assessed, based on species-specific desired future conditions, and compared to overall habitat conditions and identification of causal factors for declines. On a watershed level, restoration activities would result in higher quality forage, increased cover and vegetation structure, and increased habitat quality for special status species. On a landscape level, restoration activities to achieve appropriate ranges of vegetation conditions would improve special status species habitats by reducing habitat degradation and fragmentation, and promoting ecological health and resiliency. The Proposed RMP would achieve the program goal for special status wildlife species. A detailed analysis of potential impacts to special status plants would be completed in conjunction with each watershed and habitat analysis. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis. Three new ACECs would be established primarily for the protection of special status plants. The establishment of these ACECs and the land use restrictions associated with them may offer additional protection where special status plants occur in these areas. Therefore, implementation of the Proposed RMP would result in additional protection for special status plants and achieve the program goal relative to such species.
Alternative A	Management for sensitive fish and invertebrate species would focus on the maintenance, mitigation, and restoration of habitat, as identified in the management and recovery plans for the species. Other programs would continue to result in sedimentation and habitat alteration due to surface disturbance. On a long-term basis, riparian vegetation would be degraded as a result of wild horses and livestock grazing, which would adversely affect aquatic habitat. Development of disposed lands could involve uses with water consumption requirements that could affect habitat through changes in flow or water level. In general, there would be less protection for spring habitat. Alternative A would meet the goal and objectives for federally listed fish species through management actions and compliance with Section 7 of the Endangered Species Act. However, the goal and objectives may not be met for “precluding the need to list additional species.” Management of special status species would continue to occur predominantly at the scale of individual allotments and occasionally at a planning area scale through management actions that address an immediate need or habitat niche for the maintenance, mitigation, and restoration of a single special status species on a case-by-case basis. Although restoration would promote more suitable habitat conditions for special status species on a localized basis, watershed level and landscape level effects would include continued habitat deterioration for many of the special status species. A detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. As part of the best management practices, potential mitigation measures and monitoring would be applied on a site-specific basis. Therefore, implementation of Alternative A would result in minimal long-term impacts to special status plants and enable additional management emphasis for any populations identified during the watershed analysis. However, any ongoing impacts to unknown populations of special status plants would continue until such areas undergo watershed analysis. Overall, this alternative would have a greater risk than the Proposed RMP of failing to achieve the program goal for special status plant species.

Table 4.1-1 (Continued)

Alternative B	Sensitive fish and invertebrate species would be managed through evaluations of their overall habitat conditions. Numerous resource uses could affect sensitive aquatic habitat as a result of sedimentation, vegetation removal, or habitat alteration. However, grazing impacts would be eliminated on approximately 3.9 million acres including habitats for several aquatic special status species. Vegetation management could result in greater short-term impacts through erosion and sedimentation as a result of increased treatment areas. Management and restoration plans with two new ACECs would help restore habitat for fish species in Condor Canyon and Lower Meadow Valley Wash. On a long-term basis, the restoration of vegetation resilience in riparian areas and the surrounding uplands would improve habitat conditions for sensitive fish and invertebrate species. By implementing the various management actions associated with the special status species management direction and mitigation actions associated with other programs, the goals and objectives for special status aquatic species would be achieved. Special status wildlife species would be specifically assessed, based on species-specific desired future conditions, and compared to overall habitat conditions and identification of causal factors for declines at the mid-scale. On a watershed level, restoration activities would result in higher quality forage, increased cover and vegetation structure, and increased security for special status species. On a landscape level, restoration activities to achieve desired range of conditions would improve special status species habitats by reducing habitat degradation and fragmentation, and promoting ecological health and resiliency. Alternative B would be expected to achieve the program goal. The initiation of a systematic survey of potential habitats for the Ute ladies'-tresses orchid, development of recovery actions and a conservation strategy for potential habitat for, or possible new occurrences of, Ute ladies'-tresses orchid would provide additional protection and recovery prospects for these species. The establishment of 15 new ACECs for the protection of other resources and the land use restrictions associated with these ACECs may offer additional protection where and if special status plants occur in these areas. Therefore, implementation of Alternative B would result in additional protection for special status plants and would achieve the program goal relative to such species.
Alternative C	Program-specific impacts special status aquatic species would be similar to Alternative A. In general, management actions would allow a greater intensity of development, which would result in a higher potential for sedimentation impacts on aquatic habitat. Increased recreation activities could result in additional surface disturbance and sediment impact on habitat for sensitive aquatic species. Alternative C would meet the goal and objectives for federally listed fish species through management actions and compliance with Section 7 of the Endangered Species Act. However, the goal and objectives may not be met for "precluding the need to list additional species." Management of special status wildlife species would continue to address an immediate need or habitat niche for the maintenance, mitigation, and restoration of a single special status species on a case-by-case basis. On a watershed level, special status species conflicts would include decreased shrub cover, a reduction in vegetation community structure, and increased competition for habitat by sagebrush dependent species. On a long-term basis, Alternative C would not likely achieve the program goal. A detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis. In addition, the establishment of 17 new ACECs for the protection of other resources and the land use restrictions associated with these ACECs may offer additional protection where and if habitat for special status plants occur in these areas. However, any ongoing impacts to unknown populations of special status plants would continue until such areas undergo watershed analysis. Overall, this alternative would have a greater risk than the Proposed RMP of failing to achieve the program goal for special status plant species.

Table 4.1-1 (Continued)

Alternative D	Emphasis on passive management of sensitive aquatic species through exclusion of commodity uses on public lands could result in improved habitat conditions. Less erosion would occur from vegetation treatment, but far more would occur from widespread wildland fires. By implementing the various management actions associated with the special status species management direction and mitigation actions associated with other programs, the goals and objectives for special status aquatic species would be achieved. Management of habitat for special status species would emphasize a passive management approach through the exclusion of discretionary commodity uses of public lands. On a watershed level, natural habitat transitions would continue with increased canopy cover and possible increased regeneration of palatable species. On a landscape level, habitats would exhibit a reduction in overall habitat quality, ecological health, and resiliency as the result of major, widespread wildland fires resulting in conversion to herbaceous communities. These habitat changes would result in a reduction of vegetation community structure and overall suitability of habitats for special status species. This alternative would likely achieve the program goal in the short term, but fail to sustain this habitat quality and achieve the goal over the long term. Potential habitat for Ute ladies'-tresses orchid could improve in the planning area with the elimination of grazing and most other physical disturbances. A detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. The additional protection resulting from these measures, however, would be offset by the potential damage to special status plant populations resulting from increased wildland fires and uncontrolled wild horse populations under this alternative. Overall, this alternative would have a greater risk than the Proposed RMP of failing to achieve the program goal for special status plant species.
WILD HORSES	
Goal – Maintain and manage healthy, self-sustaining wild horse herds inside herd management areas within appropriate management levels to ensure a thriving natural ecological balance while preserving a multiple-use relationship with other uses and resources. **Northeastern Great Basin Resource Advisory Council Standard. Healthy wild horse and burro populations exhibit characteristics of healthy, productive, and diverse population. Age structure and sex ratios are appropriate to maintain the long-term viability of the population as a distinct group. Herd management areas are able to provide suitable feed, water, cover and living space for wild horses and burros and maintain historic patterns of habitat use.** **Mojave-Southern Great Basin Resource Advisory Council Standard. Wild horses and burros within herd management areas should be managed for herd viability and sustainability. Herd management areas should be managed to maintain a healthy ecological balance among wild horse and/or burro populations, wildlife, livestock, and vegetation.**	
Proposed RMP	Wild horses would be managed where healthy populations can be maintained over the long-term. Wild horse populations would be brought into balance with the available habitat resources needed to sustain healthy populations and prevent damage to the environment and surrounding resources. The Proposed RMP would achieve the goal for the wild horse management program.
Alternative A	Alternative A would maintain several herd management areas that possess marginal or inadequate habitat to sustain wild horse populations at a level that would ensure healthy populations over the long-term, thereby resulting in a high probability for continued conflicts with other resources, conflicts with private land owners, and occasional starvation and dehydration of wild horses. Alternative A would fail to achieve the program goal over the long term.
Alternative B	Wild horse populations would be brought into balance with the available habitat resources needed to sustain healthy populations over the long-term and prevent damage to the environment and surrounding resources. Vegetation treatments would, in the long term, enhance habitat conditions within the herd management areas to ensure the sustainability of healthy herds maintained at appropriate management levels. Thus, Alternative B would achieve the program goal.

Table 4.1-1 (Continued)

Alternative C	Wild horse populations would be brought into balance with the available habitat resources needed to sustain healthy populations and prevent damage to the environment and surrounding resources. Alternative C, however, would likely have greater impacts and risks to wild horse populations than the Proposed RMP over the long term due to increased potential for major wildland fires.
Alternative D	The limited management approach in Alternative D for the existing 24 herd management areas and absence of fire management would result in rapid deterioration of ecological systems within these areas and likely starvation of many animals as populations increase beyond the support level of their habitat. Therefore, Alternative D would fail to achieve the stated goal for this program.
CULTURAL RESOURCES	
Goal – Identify, preserve, and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations (Federal Land Policy and Management Act, Section 103(c), 201(a), and (c); National Historic Preservation Act, Section 110(a); Archaeological Resources Protection Act, Section 14 (a)). **Seek to reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration, or potential conflict with other resource uses (Federal Land Policy and Management Act, Section 103(c), National Historic Preservation Act, Section 106, 110(a)(2)) by ensuring that all authorizations for land use and resource use will comply with the National Historic Preservation Act, Section 106.** **Northeastern Great Basin Resource Advisory Council Standard. Land use plan will recognize cultural resources within the context of multiple use.**	
Proposed RMP	There would be a higher level of protection of cultural resources through use allocations, with 100 percent of the sites determined eligible to the National Register of Historic Places allocated and managed for Conservation, Scientific, and Public Use, and the designation of 8 new ACECs. There also would be more protection of cultural/archaeological resources than current management due to the decrease in lands open to off-highway vehicle use, wild horses, and livestock grazing. The level of protection from impacts associated with fire management and recreation activities would be greater than current management. The Proposed RMP would meet the goals for the cultural resources program, including the Resource Advisory Council Standards.
Alternative A	Cultural resources would continue to be managed for future resource use allocations. Indirect impacts associated with off-highway vehicle use, wild horses, livestock grazing, and recreational activities would continue to occur under existing management. Alternative A would not meet the goals for the cultural resources program but would meet the Resource Advisory Council Standards.
Alternative B	Management of cultural resources would be the same as the Proposed RMP. The level of protection from recreation activities would be greater than the current management. Alternative B would meet the goals for the cultural resources program, including the Resource Advisory Council Standards.
Alternative C	Cultural resource use allocations would protect cultural/archaeological resources; however, there would be a lower level of protection since more sites would be allocated as Discharged from Management. The decrease of lands open to off-highway vehicle use would provide more protection of cultural resources than current management. The level of protection from impacts associated with recreation and fire management would be lower than Alternative A and the Proposed RMP. Alternative C would meet the goals for the cultural resources program, including the Resource Advisory Council Standards.
Alternative D	More cultural resources would be allocated and managed for Conservation Use, which would provide a higher level of protection compared to the Proposed RMP. The level of protection of cultural/archaeological resources from off-highway vehicle use, recreation, and livestock grazing would be greater than all other alternatives. Fire management activities would pose a higher risk to cultural resources than all other alternatives. Alternative D would meet the goals for the cultural resources program, but would not meet the Resource Advisory Council Standards.

Table 4.1-1 (Continued)

PALEONTOLOGICAL RESOURCES	
Goal – Identify and manage at-risk paleontological resources (scientific value), preserve and protect vertebrate fossils through best science methods, and promote public and scientific use of invertebrate and paleobotanical fossils.	
Proposed RMP	Paleontological resources would be protected under the Proposed RMP, because they would be allocated and managed for Scientific, Conservation, and/or Public Use. An increase in the number of acres withdrawn from mineral entry and a decrease in lands open to off-highway vehicle use would reduce impacts to paleontological resources. The no-fee registration system would increase the protection of known trilobite localities by tracking the amount of use and associated impacts. The Proposed RMP would meet the goal for the paleontology program.
Alternative A	Paleontological resources would be managed the same as the Proposed RMP, but no registration system would be in place for trilobite collecting. The amount of unauthorized collecting of common invertebrate fossils (e.g., trilobites) and impacts associated with off-highway vehicle use would continue to increase as recreation and visitor use increases. Alternative A would not meet the goal for the paleontology program.
Alternative B	Paleontological resources would be protected, because they would be allocated and managed for Scientific, Conservation, and/or Public Use. An increase in the number of acres withdrawn from mineral entry and a decrease in lands open to off-highway vehicle use would reduce impacts to paleontological resources. The no-fee registration system would increase the protection of known trilobite localities by tracking the amount of use and associated impacts. Alternative B would meet the goal for the paleontology program.
Alternative C	Management of paleontological resources would be the same as the Proposed RMP, with the exception of the registration system. The fee-based registration system could reduce the number of trilobite collectors, as well as increase the protection of trilobite collecting localities and associated impacts by tracking the amount of use and associated impacts. The decrease in lands open to off-highway vehicle use would reduce impacts to paleontological resources. Alternative C would meet the goal for the paleontology program.
Alternative D	Management of paleontological resources would be the same as the Proposed RMP, with the exception of trilobite collecting. Under this alternative, all trilobite collecting localities would be closed, which would provide a higher level of protection of these fossils compared to all other alternatives. The increase in lands closed to off-highway vehicle use would reduce impacts to paleontological resources. Alternative D would meet the goal for the paleontology program.
VISUAL RESOURCES	
Goal – Manage public land actions and activities in a manner consistent with Ely Field Office visual resource management class objectives.	
Proposed RMP	Management prescriptions under the Proposed RMP would classify approximately 1.2 million acres as Visual Resource Management Class I and 2.4 million acres as Visual Resource Management Class II. Having classifications for all lands within the decision area would allow for a more comprehensive framework for preserving and mitigating impacts to visual resources. Maximizing the use of prescribed fire and wildland fire use would create short-term visual impacts that would diminish in the long term after treatments are completed. The Proposed RMP would meet the goal for the visual resources program.
Alternative A	Management prescriptions for Class I and II areas (approximately 1.5 million acres and 284,000 acres, respectively) would continue to preserve the scenic character of these lands. Although unclassified areas in the historic Egan Resource Area totaling approximately 3.6 million acres (32 percent of the decision area) would be addressed on a project-specific basis, there potentially could be impacts by not having a comprehensive framework for addressing visual resources in place. Continued designation of areas as open to cross-country off-highway vehicle use would result in visual impacts through surface disturbances and dust emissions. Alternative A would not meet the goal for the visual resources program.
Alternative B	Management prescriptions under Alternative B would classify approximately 1.2 million acres as Visual Resource Management Class I and 2.4 million acres as Visual Resource Management Class II. Having classifications for all lands within the decision area would allow for a more comprehensive framework for preserving and mitigating impacts to visual resources. Maximizing the use of prescribed fire would create short-term visual impacts that would diminish in the long term after treatments are completed. Alternative B would meet the goal for the visual resources program.

Table 4.1-1 (Continued)

Alternative C	Management prescriptions under Alternative C would classify approximately 1.2 million acres as Visual Resource Management Class I and 2.4 million acres as Visual Resource Management Class II. Having classifications for all lands within the decision area would allow for a more comprehensive framework for preserving and mitigating impacts to visual resources. Utility corridor widths of 3 miles would create greater impacts in localized areas. Suppression of wildland fires would reduce impacts from fire in the short term until wildland fires became impossible to suppress, which could lead to greater long-term impacts. Alternative C would meet the goal for the visual resources program.
Alternative D	Management prescriptions under Alternative D would increase the amount of land in Visual Resource Management Class II to approximately 10.3 million acres (90 percent of the decision area). By identifying all areas (11.5 million acres) as either Class I or II, substantial restrictions would be placed on activities that could be allowed under other resource management activities or increase the potential mitigation measures that would be required. The fact that there would be no new land use authorizations, such as rights-of-way, also would reduce impacts in the short and long term. A policy of minimal fire suppression would create short-term visual impacts that would increase over the long term as more catastrophic fires occur. Alternative D would meet the goal for the visual resources program.
LANDS AND REALTY	
Goal – Manage public lands in a manner that: • **Allows the retention of public land with high resource values;** • **Consolidates public land patterns to ensure effective administration and improve resource management;** • **Makes public lands that promote community development available for disposal;** • **Meets public, local, state, and federal agency needs for use authorizations such as rights-of-way, permits, leases, and easements while avoiding or minimizing adverse impacts to other resource values; and** • **Utilizes withdrawal actions with the least restrictive measures and minimum size necessary to accomplish the desired purpose.**	
Proposed RMP	Approximately 75,600 acres would be available for possible disposal by competitive sales and would be withdrawn from mineral entry. Having these areas identified would facilitate the disposal of BLM-administered lands for community development. Designated critical habitat for federally listed threatened and endangered species, cultural resources, mineral exploration and development, watershed restoration, and special designation areas could preclude the disposal of certain parcels and land use authorizations. The Proposed RMP would allow a higher degree of flexibility in land use authorizations by identifying the new 0.5-mile-wide Spring Valley corridor. Encouraging co-location of land use authorizations would reduce or localize impacts to other resources. Approximately 1.4 million acres would be identified as avoidance or exclusion areas. The Proposed RMP would meet the goals for the lands and realty program.
Alternative A	Under Alternative A, approximately 31,900 acres would be identified for disposal by competitive sales. Having fewer areas identified for potential disposal or withdrawn could make the disposal of land for promoting community development more difficult and time-consuming compared to the Proposed RMP. By not identifying new communication sites or 0.5-mile-wide corridors, the location of future rights-of-way and communication sites would not be addressed proactively and could take longer to occur by being addressed on a case-by-case basis under site-specific NEPA analyses. Alternative A would not meet the goals for the lands and realty program.
Alternative B	Under Alternative B, there would be 90,600 acres identified for disposal by competitive sales and withdrawn from mineral entry. More area would be available for siting rights-of-way within utility corridors because several corridors would be twice as wide as they would be under the Proposed RMP. This would allow greater flexibility in conducting lands and realty activities. Limitations on siting new communication sites until existing capacity was exceeded would limit the ability to develop new sites to promote community development. Alternative B would meet the goals of the lands and realty program.
Alternative C	Under Alternative C, there would be 295,200 acres identified for disposal by competitive sales and withdrawn from mineral entry. More area would be available for siting rights-of-way within utility corridors because several corridors would be six times as wide as they would be under the Proposed RMP. This would allow greater flexibility in conducting these lands and realty activities. Lack of emphasis on co-location of siting new communication sites may lead to a greater proliferation of these sites as compared to the Proposed RMP. Alternative C would meet the goals of the lands and realty program.

Table 4.1-1 (Continued)

Alternative D	Approximately 12,400 acres would be identified for possible disposal by competitive sales. Because there would be no net loss of BLM-administered public land, conducting disposals would be much more difficult and time-consuming, as replacement lands would need to be acquired concurrently or prior to disposal. This would limit the ability of the Ely Field Office to dispose of land for community and economic development, or for other purposes. Because requests for new withdrawals, withdrawal relinquishments, or modifications would be processed on a case-by-case basis, there would not be a proactive effort toward identifying areas of sensitive or high resource values for withdrawal from entry. Limitations on new land use authorizations, and the closure of sites within migratory bird corridors and visually sensitive sites would greatly restrict lands and realty actions in Alternative D. The possible elimination of existing communication sites would further reduce the ability of the lands and realty program to address future needs. Alternative D would not meet the goals of the lands and realty program.
RENEWABLE ENERGY	
Goal – Provide opportunities for development of renewable energy sources such as wind, solar, biomass, and other alternative energy sources while minimizing adverse impacts to other resources such as wildlife and visual resources.	
Proposed RMP	The primary impact of the Proposed RMP would be to facilitate the development of renewable energy resources. Surface disturbance for an assumed wind energy development scenario could total 4,000 acres, about 0.03 percent of the decision area. Wind and solar power developments would have to be compatible with the management prescriptions for other resources and would be evaluated on a project-specific basis. Biomass development would be based on the acreage of vegetation treatment needed to restore healthy vegetation communities. The Proposed RMP would meet the goal for the renewable energy program.
Alternative A	The current management actions under Alternative A are not specific for the development of renewable energy projects, which could slightly reduce the likelihood of developing such projects. Alternative A would meet the goal for the renewable energy program.
Alternative B	The primary impact of Alternative B would be to facilitate the development of renewable energy resources. Surface disturbance for an assumed renewable energy development scenario could total 4,000 acres, about 0.3 percent of the decision area. Wind and solar power developments would have to be compatible with the management prescriptions for other resources and would be evaluated on a project-specific basis. Biomass development would be based on the acreage of vegetation treatment needed to restore healthy vegetation communities. Alternative B would meet the goal for the renewable energy program.
Alternative C	The primary impact of Alternative C would be to facilitate the development of renewable energy resources. Surface disturbance for an assumed renewable energy development scenario could total 4,000 acres, about 0.03 percent of the decision area. Wind and solar power developments would have to be compatible with the management prescriptions for other resources and would be evaluated on a project-specific basis. Biomass development would be based on the acreage of vegetation treatment needed to restore healthy vegetation communities. Alternative C would meet the goal for the renewable energy program.
Alternative D	Under Alternative D, renewable energy development on public lands would be effectively eliminated through the prohibition on new land use authorizations. Alternative D would not meet the goal for the renewable energy program.
TRAVEL MANAGEMENT AND OFF-HIGHWAY VEHICLE USE	
Goal – Provide and maintain suitable access to public lands. Manage off-highway vehicle use to protect resource values, promote public safety, provide off-highway vehicle opportunities where appropriate, and minimize conflict. Work closely with local, state, tribal, and other affected parties and other resource users to address off-highway vehicle management including land use and route designations, and monitoring and adaptive management strategies such as applying the Limits of Acceptable Change process.	
Proposed RMP	The elimination of areas open to cross-country vehicle travel would reduce motorized access to parts of the planning area not served by existing or designated roads and trails in the short and long term. Completing road and trail designations in site-specific travel management plans would improve motorized access and road and trail conditions over the long term. The Proposed RMP would meet the goal for the travel management and off-highway vehicle use program.
Alternative A	The current management program addresses transportation issues as they arise and on a case-by-case basis. Continuation of an open designation for 9.8 million acres (86 percent) of the decision area provides for the greatest accessibility but would result in increased damage to resources and increased conflicts between other resource users and off-highway vehicle users over time. Alternative A would not meet the goal for the travel management and off-highway vehicle use program.

Table 4.1-1 (Continued)

Alternative B	The elimination of areas open to cross-country vehicle travel would reduce motorized access to parts of the planning area not served by existing or designated roads and trails in the short and long term. Completing road and trail designations in site-specific travel management plans would improve motorized access and road and trail conditions over the long term. Alternative B would meet the goal for the travel management and off-highway vehicle use program.
Alternative C	The reduction of areas open to cross-country vehicle travel from 9.8 million acres to 32,000 acres would reduce motorized access to parts of the planning area not served by existing or designated roads and trails in the short and long term. Completing road and trail designations in site-specific travel management plans would improve motorized access and road and trail conditions over the long term. Alternative C would meet the goal for the travel management and off-highway vehicle use program.
Alternative D	The management actions under Alternative D would substantially restrict motorized access in the planning area in the short and long term by limiting off-highway vehicle use to maintained roads and trails. The lack of new land authorizations for roads would reduce accessibility in the long term. Alternative D would not meet the goal for the travel management and off-highway vehicle use program.
RECREATION	
Goal – Provide quality settings for developed and undeveloped recreation experiences and opportunities while protecting resources. Conduct an assessment of current and future off-highway vehicle demand, and plan for and balance the demand for this use with other multiple uses/users. Develop sustainable off-highway vehicle use areas to meet current and future demands, especially for urban interface areas.	
Proposed RMP	The Proposed RMP would constitute a comprehensive program that addresses the trend of increasing recreational use as well as provides the opportunity to develop management strategies for anticipated future conditions. Five special recreation management areas totaling approximately 1.2 million acres (10 percent of the decision area) would be designated. Elimination of areas designated as open to cross-country off-highway vehicle use would reduce off-highway motorized recreational opportunities. However, these transportation restrictions also would provide an increased opportunity for seclusion and primitive recreational experiences. A sufficient number of routes would be designated to accommodate motorcycle and truck competitive events. The Proposed RMP would meet the goal for the recreation program.
Alternative A	As recreation use continues to increase over time, the limited number of recreation sites in Alternative A eventually would lead to increased competition for recreation opportunities. With only one 750,000-acre special recreation management area in the decision area and no further creation of developed recreation sites, the ability of the Ely Field Office to manage recreation as a primary objective in areas with high recreation potential would be constrained. About 9.8 million acres (86 percent of the decision area) would remain open to cross-country off-highway vehicle travel, resulting in no reduction in off-highway motorized recreational opportunities. No routes would be designated for motorcycle and truck competitive events, but such events would still be permitted. Alternative A would not meet the goal for the recreation program.
Alternative B	Alternative B would constitute a comprehensive program that addresses the trend of increasing recreational use as well as provides the opportunity to develop management strategies for anticipated future conditions. Nine special recreation management areas totaling approximately 2.7 million acres (24 percent of the decision area) would be designated. Elimination of areas designated as open to cross-country off-highway vehicle use would reduce off-highway motorized recreational opportunities. However, these transportation restrictions also would provide an increased opportunity for seclusion and primitive recreational experiences. A reduced number of routes would be designated for motorcycle and truck competitive events, but such events would still be permitted. The Proposed RMP would meet the goal for the recreation program.
Alternative C	Alternative C would constitute a comprehensive program that addresses the trend of increasing recreational use as well as provides the opportunity to develop management strategies for anticipated future conditions. Nine special recreation management areas totaling approximately 2.56 million acres (22 percent of the decision area) would be designated. Reduction but not elimination of areas designated as open to cross-country off-highway vehicle use would reduce off-highway motorized recreational opportunities. However, these transportation restrictions also would provide an increased opportunity for seclusion and primitive recreational experiences. An increased number of routes would be designated to accommodate motorcycle and truck competitive events. The Proposed RMP would meet the goal for the recreation program.
Alternative D	Under Alternative D, the spectrum of recreation opportunities on BLM-administered lands would be greatly reduced, as there would be no special recreation management areas designated, no special recreation permits issued, and all existing developed recreation sites would be eliminated. Alternative D would not meet the goal for the recreation program.

Table 4.1-1 (Continued)

LIVESTOCK GRAZING	
Goal – Manage livestock grazing on public lands to provide for a level of livestock grazing consistent with multiple use, sustained yield, and watershed function and health. **Northeastern Great Basin Area Standards.** • **Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.** • **Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria.** • **Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.** **Mojave-Southern Great Basin Area Standards.** • **Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.** • **Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).** • **Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.**	
Proposed RMP	Approximately 11.3 million acres would remain available for grazing following closures on all or portions of five ACECs. Approximately 424,602 animal unit months on 8.4 million acres would be authorized on grazing allotments that have been determined to be meeting or progressing toward achievement of standards for rangeland health. Approximately 120,665 animal unit months on 3.2 million acres would be authorized on grazing allotments pending their evaluation for meeting rangeland health standards. The total acreage available for grazing is subject to change based on approximately 75,600 acres identified for potential sale. Although portions of these lands may continue to be grazed after they are sold, they would no longer be administered as part of the BLM livestock grazing program. Vegetation treatments and protection of freshly seeded areas also could temporarily affect grazing on substantial areas during the treatment process, but it is expected that increased forage production on previously treated areas would offset temporary reductions in those allotments. The Proposed RMP would achieve the stated goal for this program.
Alternative A	Approximately 11.3 million acres would remain open to grazing. Approximately 424,602 animal unit months on 8.4 million acres would be authorized on grazing allotments that have been determined to be meeting or progressing toward achievement of standards for rangeland health. Approximately 120,665 animal unit months on 3.2 million acres would be authorized on grazing allotments pending their evaluation for meeting rangeland health standards. Potential land disposals would affect total acreage available for grazing.
Alternative B	Approximately 3.8 million acres of additional grazing area affecting 189 total allotments would be unavailable for grazing due to desert tortoise habitat, bighorn sheep habitat, acquisition of former U.S. Forest Service allotments that are currently unavailable for grazing, and new ACECs (beyond the 203,670 acres already unavailable in the existing desert tortoise ACECs) resulting in long-term impacts to livestock grazing. Livestock grazing would be authorized on those allotments that have been determined to be meeting the standards for rangeland health. Livestock grazing would also be authorized on allotments pending their evaluation for meeting the standards. Vegetation treatments and protection of freshly seeded areas also could temporarily affect grazing on substantial areas during the treatment process causing short-term impacts. It is expected, however, that increased forage production on previously treated areas would offset temporary reductions in these allotments. Because this alternative would effectively render one-third of the planning area unavailable for livestock grazing, it is questionable as to whether the alternative could be considered as meeting the program goal, even though the goal would be met on the remainder of the area.

Table 4.1-1 (Continued)

Alternative C	Approximately 11.3 million acres would remain available for grazing in 234 existing allotments, subject to potential land sales of up to 295,200 acres. These areas would become unavailable for grazing when they are sold. Long-term fire impacts to grazing would be substantial. Vegetation treatments and protection of freshly seeded areas also could temporarily affect grazing on substantial areas during the treatment process, but it is expected that increased forage production on previously treated areas would offset temporary reductions in these allotments. Alternative C would achieve the goal for the livestock grazing program.
Alternative D	Elimination of the livestock grazing program within the planning area would constitute a major change in policy with attendant impacts to livestock grazing, other resource uses, and users. Since Alternative D does not provide for livestock grazing as a component of multiple use of the public lands, it would not achieve the stated goal for this program.
FOREST/WOODLAND AND OTHER PLANT PRODUCTS	
Goal – Provide opportunities for traditional and non-traditional uses of vegetation products on a sustainable, multiple-use basis.	
Proposed RMP	The Proposed RMP would expand the number of species permitted for use as fuelwood, posts and poles, and Christmas trees, providing a greater opportunity for personal and commercial use and greater flexibility in the management of these woodland communities. The increased availability is not likely to affect the overall resource supply for any of the species involved. Availability of woodland biomass products would continue to exceed demand on both short and long term basis. Green biomass availability would be replaced with dead wood during treatments, but overall product availability would remain relatively constant. Christmas tree availability would likely be reduced as treatments are implemented in more productive sagebrush ecological sites. Pine nut production would be reduced during the short term after treatments, but should maintain or exceed current production rates in the long term as woodland sites are restored and become resilient. Forest/woodland and other plant product availability would be affected in high priority watershed areas prior to other watersheds. The harvest of forest/woodland products would continue to have minimal effects on the woodland communities involved. The management actions of the Proposed RMP would achieve the goal for this program.
Alternative A	Current supplies of forest/woodland and other plant products including fuelwood, posts and poles, Christmas trees, pinyon pine nuts, various native seeds, and live plants of selected species for transplantation are adequate to meet existing demands. It is expected that availability of these forest/woodland products would continue to exceed the expected demand. Thus, this alternative would meet the program goal.
Alternative B	Alternative B would expand the number of species permitted for use as fuelwood, posts and poles, and Christmas trees, providing a wider opportunity for personal and commercial use. The increased availability is not likely to affect the overall resource supply for any of the species involved. Availability of forest/woodland products would exceed the expected demand. On a long-term basis, the production of forest/woodland products from restored and resilient communities is expected to exceed current levels. This alternative would achieve the program goal.
Alternative C	Alternative C would expand the number of species permitted for use as fuelwood, posts and poles, and Christmas trees and areas in which these products could be collected, thus, providing a greater opportunity for personal and commercial use. The increased availability is not likely to affect the overall resource supply for any of the species involved. Availability of forest/woodland products would exceed the expected demand until major fires eliminated large blocks of pinyon-juniper woodlands. This alternative would achieve the program goal in the short-term, but may fail to achieve sustainability over the long term.
Alternative D	It is highly probably that major fires at an early date under this alternative would substantially reduce the long-term supply of forest/woodland products. The harvest constraints under Alternative D would fail to provide the desired opportunities for traditional and non-traditional use of the resource outlined in the program goal.

Table 4.1-1 (Continued)

GEOLOGY AND MINERAL EXTRACTION	
Goal – Allow for meeting the Nation's energy needs while providing environmentally responsible production of fluid leasable minerals and geophysical exploration for energy resources on public lands. Allow development of solid leasable and locatable minerals in a manner to prevent unnecessary or undue degradation. Allow development of mineral materials in a manner that would prevent unnecessary or undue degradation, meet public demand, and minimize adverse impacts to other resource values.	
Proposed RMP	The majority of the decision area would be open to fluid mineral exploration and development. The areas proposed for closure to leasing or those with no surface occupancy restrictions that are outside of wilderness, yet within high to moderate potential is less than 5 percent of the decision area. Therefore, the proposed management would allow for the exploration and development of oil and gas while protecting important resource values. The decision area has a low potential for the occurrence of solid leasable mineral resources, so the closure of the lands described would likely have little impact on the exploration and development of solid leasable minerals. Less than 5 percent of the decision area would involve discretionary closures to locatable minerals within high to medium potential. This small percentage of withdrawn areas is not expected to have a major impact on the recovery of locatable minerals. Therefore, the Proposed RMP would allow for the exploration and development of locatable minerals while protecting important resource values. Because mineral material occurrences are so common and widespread, there should be little impact to the availability of these deposits despite the proposed closures and areas where discretionary closures are likely. It is expected that there would be sufficient resources available to meet local, regional, and national needs, while providing for the protection of other resources and uses.
Alternative A	Alternative A limits the oil and gas program mostly due to the small percentage of the decision area that is available to leasing due to the limited coverage of previous NEPA analyses. It is difficult to compare Alternative A with the Proposed RMP because of the difference in acres available for leasing. Looking only at the areas available for leasing in both programs, the differences are small. The Proposed RMP identifies more ACECs and emphasizes the use of no surface occupancy more often than in Alternative A. In Alternative A there is high to medium oil and gas potential within about 92 percent of the entire area considered for leasing. The areas designated as "closed" and "no surface occupancy" occupy about 13 percent of this high and medium potential with about 80 percent of those acres in designated wilderness. Under current management there would be noticeable impact on the ability to develop oil and gas resources because over half the decision area is currently not available for leasing. The decision area has a low potential for the occurrence of solid leasable mineral resources so the closure of the lands described would likely have little impact on the exploration and development of solid leasable minerals. About 1.8 percent of the decision area in Alternative A as compared to about 4.3 percent in the Proposed RMP would involve discretionary closures to development of locatable minerals within high to medium potential. This small percentage of withdrawn areas is not expected to have a major impact on the recovery of locatable minerals. Therefore, Alternative A might allow for slightly more opportunities (2.5 percent of the decision area) for the exploration and development of locatable minerals but would not protect important resource values as well as the Proposed RMP. The total acreage open to mineral materials disposal would be about 87 percent of the decision area. Most of the closed areas are non-discretionary closures for designated wilderness or wilderness study areas and not subject to the management of the Ely Field Office. Proposed discretionary closures would be about 3.4 percent of the decision area. Because mineral material occurrences are so common and widespread, there should be little impact to the availability of these deposits despite the proposed closures and areas where discretionary closures are likely.

Table 4.1-1 (Continued)

Alternative B	The percentage of closed and no surface occupancy areas are not substantially different than for the Proposed RMP. The main difference would be in how the stipulations were applied. All other conclusions would be the same as for the Proposed RMP. Since the potential for solid leasable minerals in the Ely decision area is extremely low, and there are no current or reasonably foreseeable operations, the areas of closures would have little impact on the exploration and development of solid leasable minerals. Alternative B would have approximately 209,500 fewer acres withdrawn from locatable mineral entry and a lower percentage of closed areas within areas of high to medium potential in comparison to the Proposed RMP. Alternative B would have slightly less impact to the development of locatable minerals but would not have the more defined protection of critical resources that are found in the Proposed RMP. Alternative B closes about half of the acreage of discretionary closures in comparison with the Proposed RMP. The proposed management actions in Alternative B would meet the stated goal of the minerals program to provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses.
Alternative C	Alternative C would have approximately the same area closed to leasing as the Proposed RMP, but 3 percent less of these closed areas would be in high to medium potential. Alternative C further developed the stipulations from existing management rather than evaluate and identify new areas of resource protection as thoroughly as in the Proposed RMP. The differences in percentages between Alternative C and the Proposed RMP are not enough to state that either alternative would have more impact than the other. The overall differences would be minimal compared to the size of the decision area. Since the potential for solid leasable minerals in the Ely decision area is extremely low, and there are no current or reasonably foreseeable operations, the areas of closures would have little impact on the exploration and development of solid leasable minerals. There would be comparable acreage proposed for withdrawal for locatable minerals in Alternative C as in the Proposed RMP. Within the withdrawals there would be approximately 13 percent more within high to medium potential in the Proposed RMP than for Alternative C. Therefore, even though approximately the same acreage is proposed for withdrawal in Alternative C, fewer of those acres are within high to medium potential. Therefore, Alternative C could have less impact to the development of locatable minerals than the Proposed RMP. The overall differences would be minimal compared to the size of the decision area. Because mineral material occurrences are so common and widespread, even with the differences in withdrawals, there should be little impact to the availability of these deposits despite the proposed closures and areas where discretionary closures are likely.

Table 4.1-1 (Continued)

Alternative D	The entire decision area would be closed to new fluid minerals leasing, but existing leases would be honored. The effects would be to preclude exploration and development (except on existing leases) and result in the loss of the resource available to the country, loss of potential lease bonus and rental revenue, loss of potential production royalties and property taxes, and other losses to related economic activity in the decision area. If no discoveries are made on existing leases, the leases would expire over time resulting in a total cessation of fluid mineral activities. Since 80 percent of the area has a high to medium potential for fluid minerals (especially oil and gas) and those resources would be unavailable, this extensive closure of lands described above would adversely affect the exploration and development of fluid minerals. Because there is no current solid leasable activity and the potential is low, the closure of the entire decision area would not be important unless an economical deposit was discovered. With over half the decision area withdrawn from mineral entry, there would be a major impact on the exploration and development of locatable minerals. Alternative D would not meet the stated goal of the minerals program to provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses. The withdrawal of over half the decision area would cause severe limitations on access to current and potential locatable mineral deposits. Inability to explore and develop locatable minerals would result in loss of the resource to the country, loss of tax revenue, and other losses to related economic activity in the decision area. The high demand for sand, gravel, and other mineral materials for development and construction would not be met under this alternative. Alternative D would not meet the stated goal of the minerals program to provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses. The closure would preclude development of mineral materials resources and result in the loss of an important resource to the public and the loss of related economic activity.
WATERSHED MANAGEMENT	
Goal – Manage watersheds to achieve and maintain resource functions and conditions required for healthy lands and sustainable uses. **Northeastern Great Basin Resource Advisory Council Standards.** • **Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and land form.** • **Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.** • **Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics; to provide suitable feed, water, cover, and living space for animal species; and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.** • **Land use plans will recognize cultural resources within the context of multiple use.** **Mojave/Southern Great Basin Resource Advisory Council Standards.** • **Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.** • **Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses.** • **Riparian and wetland vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover; capture sediment; and capture, retain, and safely release water (watershed function).** • **Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.**	

Table 4.1-1 (Continued)

Proposed RMP	The Proposed RMP watershed management actions, in combination with the associated vegetation treatment programs, generally would reduce dominance by woody species; increase the diversity of vegetation communities over the long term; and provide structure with multiple-aged shrubs, forbs and perennial grasses. This would result in greater productivity, improved watershed function, and increased stability. It also would increase the amount of plant litter returned to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities, which includes maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained and improved across the landscape except at small localized areas of soil disturbing activities. Thus, the Proposed RMP management actions of this and related programs would achieve the program goal for watershed management.
Alternative A	Existing management in watershed management, vegetation, and related programs, would lead to minimal improvement at the watershed level, moderate reduction in shrub-dominated communities, and a reduction in pinyon/juniper-dominated communities over the long term. Moderate shrub reintroduction into burned sites, as part of rehabilitation efforts, would maintain diversity in the long term at a broad scale. The historic rate of treatment (largely fire rehabilitation) each year to restore desirable perennial herbaceous species and restore ecological resiliency would be increased to the extent allowed under the current fire plan. This rate, however, is not considered adequate to match the current rate of ecological deterioration, increase in woody fuel, and expansion of weedy species throughout the planning area, and substantial long-term effects on watershed function are anticipated. Thus, the rate of treatment under this alternative, when combined with actions proposed for vegetation, fish and wildlife, special status species, wild horses, livestock grazing, and fire management, has a low probability of achieving noticeable gains in vegetation resiliency and watershed function throughout the planning area and is unlikely to achieve the program goal.
Alternative B	Alternative B generally would reduce dominance by woody species and increase the diversity of vegetation communities over the long term, providing structure with multiple-aged shrubs, forbs and perennial grasses. This would result in greater productivity, and improved natural functions and watershed stability. Sustained or slightly reduced levels of livestock grazing would maintain vegetation communities which currently meet the desired range of conditions and allow improvement of remaining vegetation communities to the desired range of conditions over the short and long term. It also would increase the amount of plant litter returned to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities, which includes maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained across the landscape, except at small localized areas of soil disturbing activities. Additional forage resulting on areas successfully restored would not be allocated to livestock or wild horses and, thus, could help in further improvement of ecological health beyond meeting the standards for rangeland health. Overall, the watershed management aspects of this alternative and effects of most other programs would be similar in effect to the Proposed RMP and would be expected to achieve the goal for watershed management.
Alternative C	Implementation of this alternative would reduce dominance of woody and exotic annual species, and increase dominance of herbaceous perennials in the long term. Greater productivity for allocation to consumptive uses would result. Limited shrub reintroduction into some burns would maintain diversity at a broad scale. However, the narrower range of desired conditions (with greater emphasis on the herbaceous state) in this alternative as compared to the Proposed RMP would require more effort and more frequent treatments to achieve and maintain. The higher probability for widespread fire over the long term also would necessitate greater efforts for fire suppression and rehabilitation as opposed to planned treatments. As a result of optimizing livestock use of available forage, the benefits of returning vegetation material to the soil would be minimized. Long term vigor and health of vegetation communities would be maintained across the landscape, except at localized areas of concentrated activity. This alternative would have a good probability of achieving the program goal, but the probability would be less than for the Proposed RMP or Alternative B.

Table 4.1-1 (Continued)

Alternative D	Improvement in watershed function could be seen with the exclusion of livestock from all public lands and would allow natural succession to improve the condition of many vegetation communities currently supporting desirable species. Altered vegetation communities dominated by annual species would improve little toward the desired range of conditions over the life of the plan. Fine fuels would increase with limited utilization of herbaceous growth, resulting in increased size of wildland fires and increased frequency of fire. Limited suppression of wildland fire also would increase the average fire size, resulting in more frequent impacts to affected vegetation resources. The condition of many vegetation communities currently dominated by desirable mosaics of native species would be maintained or improved in those areas not subject to frequent fire. Intense, hot, wildland fires in healthy, native communities, would cause a decline in vegetation diversity and health, leading to a decline in natural levels of nutrients, water, and energy cycling. The limited management approach would result in continued proliferation of tree species into historic sagebrush-dominated sites with minimal prospects for restoration of resiliency and watershed function. Treatments would not occur at a scale and rate, when combined with the actions proposed for vegetation, fish and wildlife, special status species, wild horses, livestock grazing, and fire management, which would reverse the historic deterioration in rangeland health and restore resiliency of vegetation communities. The long-term consequences would be more dramatic and severe than in other alternatives due to the differences in fire management and other programs. Therefore, the watershed management actions, in combination with the related programs of this alternative, would fail to meet the program goal.
FIRE MANAGEMENT	
Goal – **Provide an appropriate management response to all wildland fires, with emphasis on firefighter and public safety, consistent with overall management objectives. Return fire to its natural role in the ecological system and implement fuels treatments, where applicable, to aid in returning fire to the ecological system. Establish a community education program that includes fuels reduction within the wildland urban interface to create fire-safe communities.**	
Proposed RMP	Implementation of the Proposed RMP would result in a major increase in the use of fire throughout the watersheds in the planning area. Fire use and prescribed fire would be implemented year-round in the treatment of vegetation communities and watersheds to achieve the desired range of conditions for vegetation, watersheds, and other resource programs (e.g., livestock grazing, wild horses, soils, etc.). An increase in application of other tools (e.g., herbicides) also may be necessary to meet management goals prior to expanding the use of fire.
Alternative A	Continued implementation of the Ely Fire Management Plan, which incorporates the Ely Managed Natural and Prescribed Fire Plan, would allow case-by-case decisions based in part on where the fire occurs in relation to where in the planning area such fire would be considered beneficial or detrimental.
Alternative B	Implementation would result in a major increase in the use of fire throughout the watersheds in the planning area. Fire use and prescribed fire would be implemented year-round to meet resource objectives in accordance with the Ely Fire Management Plan (BLM 2004a), thus meeting the goal for this management program. An increase in application of other tools (e.g., herbicides) also may be necessary to meet management goals prior to expanding the use of fire.
Alternative C	Full suppression of fires within the planning area would be practical only on a short-term basis. Over the long term, the attempts at full suppression would probably lead to catastrophic widespread fires resulting in long-term ecological damage and increased risk to human safety and property. Thus, this alternative would fail to meet the stated goal and objective for the fire management program.
Alternative D	Buildup of fuels would occur throughout the planning area and eventually lead to catastrophic fires, resulting in long-term ecological damage and increased risk to human safety and property. It is expected that such fires would occur earlier in time with this alternative than with Alternative C. Thus, this alternative would fail to meet the stated goal and objective for the fire management program.

Table 4.1-1 (Continued)

NOXIOUS AND INVASIVE WEED MANAGEMENT	
Goal – To reduce the introduction of, and the areal extent of noxious and invasive weed populations and the spread of these populations.	
Proposed RMP	The Proposed RMP would involve a substantial increase in vegetation treatments resulting in a temporary increase in the risk of weed invasion and expansion in the areas disturbed by treatments, but a long-term reduction in the vulnerability of these same areas. Additional constraints on off-highway vehicle use throughout the planning area and formalization of weed management actions related to construction and development activities would substantially reduce weed dispersal associated with these activities. However, with the increase in use of off-highway vehicles in designated special recreation management areas and special recreation permit areas, the potential spread of weeds will increase. Monitoring measures will be implemented to ensure containment of any outbreak. Therefore, this alternative would reduce the rate of spread of noxious and invasive weeds on a long-term basis and meet the program goal.
Alternative A	Weed control efforts historically have focused primarily on toxic and noxious weed species with less attention devoted toward the spread of annual invasive species such as cheatgrass, which provide usable forage during a short grazing season each spring. Current management includes emphasis on slowing and reversing the spread of these invasive species through application of integrated pest management methods. The rapidly increasing levels of recreational activities throughout the planning area contribute to the increasing spread of noxious and invasive species. Under this alternative, the rate of spread of noxious and invasive weeds would increase in both the short and long term, thus failing to meet the program goal.
Alternative B	Alternative B would be similar to the Proposed RMP in terms of weed management because the substantial increase in vegetation treatments under this alternative would temporarily increase the risk of weed invasion and expansion in areas disturbed by treatment but reduce the vulnerability of these same areas on a long-term basis. Additional constraints on off-highway vehicle use throughout the planning area would substantially reduce weed dispersal associated with this activity. However, with the increase in use of off-highway vehicles in designated special recreation management areas and special recreation permit areas, the potential spread of weeds would increase. Monitoring measures would be implemented to ensure containment of any outbreaks. Therefore, this alternative would reduce the rate of spread of noxious and invasive weeds on a long-term basis and meet the program goal.
Alternative C	The level of vegetation treatments involved in Alternative C would be approximately the same as the Proposed RMP. This alternative, like the Proposed RMP, would reduce the long-term impacts of noxious and invasive weeds through vegetation treatments, but this would likely be offset by the increased probability of weed establishment and spread following major wildland fire events. With the increase in use of off-highway vehicles in designated special recreation management areas and special recreation permit areas, the potential spread of weeds would increase. Monitoring measures would be implemented to ensure containment of any outbreaks.
Alternative D	Weed management would involve exclusion of some groups of herbicides. This would effectively reduce the capability to control several weed species and increase impacts associated with noxious and invasive weeds. In the short-term, the reduction in discretionary activities that serve as vectors for weed dispersal may temporarily reduce the rate of spread for existing populations and the rate of introduction for new species. However, since very few fires would be suppressed, the spread of noxious and invasive weeks throughout the planning area would likely be accelerated in both the short and long term. Once this occurred, the control of noxious and invasive species would not be attainable. Thus, the combination of weed management actions with other program actions under this alternative is not expected to reduce the rate of spread of noxious and invasive weeds in the long term, and, thus, would fail to meet the program goal.
SPECIAL DESIGNATIONS	
Goal – Evaluate areas of interest for special designation and appropriately manage those areas that meet necessary requirements.	
Proposed RMP	Approximately 317,800 acres would be designated as three existing and 17 new ACECs. Management prescriptions would protect the relevant and important values in these ACECs. Opportunities for scenic drives would be created through the designation of one existing and two new back country byways, though there may be some decrease in solitude in these areas. The Proposed RMP would meet the goal for the special designations program.

Table 4.1-1 (Continued)

Alternative A	Approximately 203,670 acres would be designated as three existing ACECs. Management prescriptions would protect the relevant and important values in these ACECs. However, no other nominated areas would be designated as ACECs, and no back country byways would be designated. These management actions would not protect the resource values deemed relevant and important nor provide the benefits of designated scenic drives. Alternative A would not meet the goal for the special designations program.
Alternative B	Approximately 338,000 acres would be designated as three existing and 15 new ACECs. Management prescriptions would protect the relevant and important values in these ACECs. Opportunities for scenic drives would be created through the designation of one new back country byway (the Silver State Trail), though there may be some decrease in solitude in this area. The benefits of designating two additional byways would not be realized. Alternative B would meet the goal for the special designations program.
Alternative C	Approximately 333,390 acres would be designated as three existing and 20 new ACECs. Management prescriptions would protect the relevant and important values in these ACECs. Opportunities for scenic drives would be created through the designation of one new back country byway (the Silver State Trail), though there may be some decrease in solitude in this area. The benefits of designating two additional byways would not be realized. Alternative C would meet the goal for the special designations program.
Alternative D	Under Alternative D, all special designations except designated wilderness and wilderness study areas would be eliminated, but with minimal activity allowed under other management programs, few impacts to the sensitive resources would be anticipated from other uses. Nevertheless, no special management or protect would be afforded to areas nominated for ACEC designation, and potential benefits to visitors from back country byway designation (other than the Mount Wilson Back Country Byway) would not be realized. Alternative D would not meet the goal for the special designations program.
ECONOMIC AND SOCIAL CONDITIONS	
Goal – No program-specific goals have been identified for economic and social conditions or health and safety.	
Economic Conditions	
Proposed RMP	The Proposed RMP would result in slight, long-term enhancements of the local economy, e.g., 255 to 260 jobs, across the planning area due to the added restoration funding, stewardship contracting, increased woodland commodity production, and developed and organized recreation. Ranch income would be adversely impacted over the short term, but would increase over the long term. Annual payments in lieu of taxes to Lincoln County would increase slightly and to White Pine County would decrease in the short term, but both would increase in the long term due to land disposal and development. RMP-related impacts on local fiscal conditions would be minimal and long term relative to local budgets.
Alternative A	Alternative A would result in minor, long-term economic impacts (jobs, income, locally derived taxes, etc.) across the planning area. Such impacts would intensify over time, accruing across the entire planning area, though not necessarily uniformly. The adverse economic impacts in Lincoln County would be masked by major, long-term economic growth associated with the Lincoln County Land Act and the Lincoln County Conservation, Recreation, and Development Act. The impacts of these Acts are unrelated to the RMP and would be differentiated across alternatives based on the acreages of affected lands, the timing of disposals, and the type and pace of subsequent development. Federal payments in lieu of taxes and grazing fees received by White Pine County would decline by as much as $86,000 annually, until development facilitated by the White Pine County Conservation, Recreation, and Development Act is realized, but would increase in Lincoln County. Changes in payments in lieu of taxes and grazing fees would be minor relative to the total budgets of the affected local governments.
Alternative B	Alternative B would result in slight, long-term enhancements of the local economy, e.g., 255 to 260 jobs, across the planning area due to the added restoration funding, enhanced woodland commodity availability, and increases in big-game hunting. Gains would be tempered by long-term decreases in farm/ranch income from allotment closures in the Mojave Desert and bighorn sheep habitat. Lincoln and White Pine counties would see major, long-term economic growth triggered by the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts. Annual payments in lieu of taxes to White Pine County would be lower than at the present, but higher than under Alternative A. Payments in lieu of taxes would increase in Lincoln County. RMP-related impacts on local fiscal conditions would be minimal and long term relative to local budgets.

Table 4.1-1 (Continued)

Alternative C	Alternative C would promote increased organized and developed recreation activity in the planning area, compared to Alternative A, and the development of tourism and recreation-oriented facilities by both the public and private sectors. Higher levels of organized use, in the form of truck and motorcycle events, would augment continued off-highway vehicle use accommodated by a management emphasis to designate roads and trails for such use. The combined organized and dispersed recreation use would stimulate recreation spending in the region, providing added stimulus to local retail, eating and drinking, lodging, and other such establishments, which would increase the number of local jobs in the affected industries.
Alternative D	Alternative D would result in moderate, long-term economic impacts, due to substantial reductions in ranch income, wildland fire suppression, and withdrawals of lands open for mineral and energy-related development. The latter could result in foregone short-term economic benefits associated with utility construction projects precluded by the lack of utility rights-of-way. The Lincoln County and White Pine County economies would experience major, long-term economic growth associated with development of lands sold under the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts. Absent development spawned by land disposals under the three acts, annual payments in lieu of taxes to White Pine County would be lower than at the present, but comparable to those under Alternative A. The provision for no net loss of public lands may delay or limit land disposal actions that would otherwise foster community and economic development, thereby impacting local fiscal budgets.
Social Conditions	
Proposed RMP	The Proposed RMP would result in regional population increases of 510 to 560 residents during restoration, with corresponding positive long-term effects on local housing markets. The gains would be relatively more concentrated around Ely. Additional social benefits may be realized from stewardship contracting, the fuels management/wildland fire risk reduction, and potential for developed recreation associated with possible land disposal. This alternative may hold relatively less appeal for those desiring maximum emphasis on resource protection and rangeland health restoration. Additionally, long-term population growth facilitated by land disposal could result in fundamental, long-term changes in social conditions across the area.
Alternative A	Long-term moderate population declines in White Pine County and moderate to major population increases in Lincoln County are projected under Alternative A absent the indirect growth associated with proposed land disposals and subsequent development. Subsequently, housing demand and prices would fall in White Pine County, while increasing in Lincoln County. Residential development in Lincoln County would increase concerns about wildland fire risks. Continuation of current management practices would be widely perceived as unresponsive to public concerns regarding declining ecological health in the Great Basin and the implications for public land use. Potential long-term development facilitated by land disposal actions under Alternative A would counteract the underlying projections and result in long-term population growth which would be accompanied by changing social dynamics in the planning area.
Alternative B	Alternative B management actions related to restoration would increase regional population by 510 to 560 residents. Generally perceived as beneficial, the gains would be relatively more concentrated around Ely. By accelerating the pace of restoration and improved ecological health, Alternative B would contribute to potential long-term population growth over and above that under Alternative A. Long-term population growth facilitated by land disposal could result in fundamental, long-term changes in social conditions across the planning area. Higher population growth would bolster housing markets in White Pine County. Many would view the increased restoration funding levels favorably, but would be concerned about short-term impacts on lifestyles and personal use, and future management as rangeland health standards are achieved. Alternative B may hold relatively stronger appeal to those favoring resource protection and restoration.
Alternative C	Alternative C restoration activities would increase regional population by 190 to 210 residents. The gains and corresponding benefits on local housing markets would be concentrated around Ely. Indirect benefits from long-term commodity use, stewardship contracting, and expanded options for land disposal would result in long-term social benefits and adverse impacts due to the scale of potential long-term growth. The management emphasis for Alternative C may hold less appeal to stakeholders desiring stronger resource protection, sportsmen, and those favoring commercial uses of forest/woodland and other plant products than to interests promoting motorized recreation.

Table 4.1-1 (Continued)

Alternative D	Alternative D would have little direct impact on regional population or housing markets, as compared to Alternative A. Alternative D carries forward several elements of Alternative A, but eliminates livestock grazing and places additional constraints on possible land disposal, mineral entry, and energy development that are viewed by residents as imperative to community and economic viability. Consequently, this alternative would hold relatively less appeal for area residents and local government officials than for those stakeholders whose specific areas of concern serve as the foundation for this alternative. Alternative D would support the least amount of residential development associated with land disposals, and thereby potentially would introduce the least influence on social dynamics within the planning area.
AMERICAN INDIAN ISSUES	
No specific impacts are compared. See Section 4.25 to identify specific issues and the sections in which they are addressed.	
ENVIRONMENTAL JUSTICE	
Goal – Continue efforts to avoid, to the extent practicable, inequitable distributions of adverse environment impacts that may arise based on race, ethnicity, or income.	
Proposed RMP	No significant, adverse, or disproportionately high environmental or health effects to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management actions associated with the Proposed RMP.
Alternative A	No disproportionate adverse impacts to low-income populations were identified in conjunction with the resource programs or management actions associated with Alternative A. Alternative A would meet the goal for environmental justice.
Alternative B	No significant, adverse, or disproportionately high environmental or health impacts to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management actions associated with Alternative B.
Alternative C	No significant, adverse, or disproportionately high environmental or health impacts to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management direction associated with Alternative C.
Alternative D	No significant, adverse, or disproportionately high environmental or health impacts to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management direction associated with Alternative D.
HEALTH AND SAFETY	
Goal – The goal of the health and safety program is to ensure that management actions are protective of life and property.	
Proposed RMP	There would be a decrease of risk to public health and safety because of the decreased wildland fire risk. The Proposed RMP would meet the goal for the health and safety program.
Alternative A	There would be a slight increase of risk to public health and safety because of an increased wildland fire risk. Alternative A would meet the goal for the health and safety program.
Alternative B	There would be a decrease of risk to public health and safety because of decreased wildland fire risk. Alternative B would meet the goal for the health and safety program.
Alternative C	There would be an increase of risk to public health and safety because of increased wildland fire risk. Alternative C would not meet the goal for the health and safety program.
Alternative D	There would be a great increase of risk to public safety because of the increased wildland fire risk and the potential for large destructive fires. Alternative D would not meet the goal for the health and safety program.

4.2 Air Resources

Impact Issues

Management of certain resources and uses (e.g., renewable energy, travel management and off-highway vehicle use, mineral management, and fire management) can result in increased particulate emissions, thereby affecting air quality in the planning area. Activities such as competitive off-highway vehicle events can produce increased levels of dust in localized areas, impair visibility, and affect other land uses (e.g., recreation). Prescribed fires and wildland fires in particular may have a substantial effect on air quality in the planning area.

Various members of the public have expressed concern that radioactive fallout from historic atmospheric nuclear tests at the Nevada Test Site may now be present in existing vegetation. When vegetation burns, any radioactive material present could be released, thereby posing a radiation exposure risk to BLM firefighters and others exposed to the smoke from the fires. In 1991, the National Nuclear Security Administration Nevada Operations and the State of Nevada Radiological Health Section collected soil and vegetation samples in nuclear fallout and non-fallout areas.

The results of this study concluded that there is no significant difference between samples taken in fallout and non-fallout areas. All results indicate radioactive materials, natural and man-made, are at minimum detectable amounts and within allowable averages for human health and safety for this geographic region and other areas of the U.S. The report concluded “Consequently, an individual exposed to smoke from burning vegetation in the Caliente, Ely, and Elko area, would be at no increased radiological risk than from smoke in southern Nevada or other areas of the U.S.” (Nevada State Health Department 2001).

The National Nuclear Security Administration Nevada Operations also reported that previous studies published in 1981 demonstrated that fallout is not concentrated into forage over time and is presently at concentrations far below soil concentrations. They concluded that “… the concentration of radioactivity in plant life is sufficiently low as not to be of concern during a fire” (Izell 2001).

Assumptions for Analysis

- For modeling purposes, representative weather conditions were selected for prescribed burns.

- For modeling purposes, representative weather conditions in summer when an active wildland fire would occur were selected.

Interactions with Other Programs

The air quality management program within the planning area potentially would be affected by actions within the resource management programs for vegetation, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, geology and mineral extraction, and fire management.

Goal

Meet all applicable local, state, and tribal constraints, and National Ambient Air Quality Standards under the Clean Air Act (as amended), and prevent significant deterioration of air quality (defined as violation of air quality regulations) within the Ely planning area from all direct and authorized actions.

Objective

To ensure air quality in the Ely planning area meets all National Ambient Air Quality Standards.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to air resources also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Air Resources Management Actions. Air quality management actions requiring continued coordination with the Nevada Division of Environmental Quality concerning air quality permitting and fire management planning would ensure that existing regulatory standards are met. Review of the air quality effects associated with proposals for land use authorizations during the project-specific NEPA process would identify potential adverse effects in Class I and II areas prior to the authorization being made. However, the State of Nevada is responsible for issuing air quality permits and not the Ely Field Office.

Impacts from Other Programs.

Vegetation. Vegetation treatments commonly would involve various degrees of disturbance to existing vegetation communities and increased exposure of bare soil surfaces until the desired vegetation changes are accomplished. Thus, the vegetation treatments are likely to be accompanied by localized increases in fugitive dust from these areas. Such impacts are expected to be local in nature and short in duration (single growing season) for any given area.

Lands and Realty. Development of fossil fuel-fired power plants in the planning area may result in additional new sources of criteria and hazardous air pollutants with associated impacts to air quality in the region. Such development may require additional transmission lines through existing corridors or new transmission line corridors. Construction, maintenance, and operations of these power plants would potentially degrade regional air quality. Construction activities associated with new rights-of-way within utility corridors would lead to temporary increases in fugitive dust emissions in these areas. Disposal of lands for residential and commercial development and the increased construction of utility rights-of-way and communication sites would contribute to short-term, localized increases in fugitive dust emissions during construction activities on these areas. Site-specific mitigation would include dust abatement procedures.

Renewable Energy. Renewable energy project construction and operation may increase the use of heavy and light vehicles on paved and unpaved roads within the planning area. Based on the reasonably foreseeable development scenario, a maximum of 4,000 acres is expected to be disturbed for construction of renewable energy facilities within the planning area during the life of this plan. This area would include several separate facilities constructed at different times. Thus, the acreage disturbed at any one time and contributing to local fugitive dust emissions would be a small fraction of this total. Dust would be controlled during construction, operation, and maintenance activities by using dust abatement techniques in accordance with applicable Nevada regulations. Water sprays or chemicals would reduce emissions on roads by as much as 90 percent. Gravel on high use roads would reduce fugitive dust emissions by reducing the silt content of the surface material.

Travel Management and Off-highway Vehicle Use. Road construction, maintenance, and use can adversely affect air quality in the planning area due to fugitive dust emitted from paved and unpaved roads by trucks, graders, pickups, and personal vehicles. Fugitive dust particles from roadways and trails tend to be larger in size and heavier in weight than other suspended particulate matter like smoke. Thus, it stays suspended for a shorter period of time and travels a shorter distance. While fugitive dust from roadways can be a nuisance and affect air quality locally, it does not typically affect regional air quality. Dust released from unpaved roads would be controlled during construction and maintenance activities by watering or using chemical dust suppressants and posting vehicle speed limits in accordance with applicable Nevada regulations. Water sprays or chemicals would reduce emissions on roads by as much as 90 percent. Gravel on high use roads would reduce fugitive dust emissions by reducing the silt content of the surface material. The operation of recreational off-highway vehicles on designated roads and trails within the planning area also would generate fugitive dust. Restriction of off-highway vehicle use to designated roads and trails as determined through a subsequent public process and area-specific analysis would help reduce the area over which fugitive dust is generated.

Recreation. Recreational events such as motorcycle and truck races and rallies have the potential to greatly increase short-term fugitive dust emissions from traffic on unpaved roads. While fugitive dust from roadways can be a nuisance and affect air quality locally, it does not typically affect regional air quality. Fugitive dust emissions are a function of vehicle weight and speed; and emissions increase dramatically with higher speeds even from smaller, lighter vehicles. Impacts from recreational events would be controlled by limiting the number of events and the routes allowed. Special Recreation Permit Areas where off-highway vehicle race events would be held are subject to individual permitting actions where all impacts, including dust emissions, would be evaluated. Permit conditions would be attached as appropriate.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario, would be disturbed throughout the planning area. Minerals exploration, development, construction, and operations may increase heavy and light vehicle use on paved and unpaved roads within the planning area. Dust would be controlled during construction, operations, and maintenance activities by using dust abatement techniques in accordance with applicable Nevada regulations. Water sprays or chemicals would reduce emissions on roads by as much as 90 percent. Gravel on high use roads would reduce fugitive dust emissions by reducing the silt content of the surface material.

Fire Management. The Ely Fire Management Plan would be implemented. This would result in the use of fire (prescribed throughout the planning area and wildland fire use on approximately 8.9 million acres) as a tool to the greatest extent possible. In the short term, this could result in more smoke emissions from larger and more frequent wildfires. However, in the long term, smoke emission would be lessened due to smaller and fewer major wildfires. In addition, adherence to air quality regulations during specific project implementation would minimize air quality impacts.

The Simple Approach Smoke Estimation Model was used to assess the impacts of wildland fire and management-ignited prescribed fire smoke on air quality within the planning area. Estimates were made of the effects of particulate matter emitted from wildland fires on health standards and visibility, and from management-ignited prescribed fire that could result from the land management alternatives under consideration for the Proposed RMP and Final EIS. Wildland fires and prescribed fires are compared because of the belief that aggressive fuel treatment can substantially reduce the likelihood of large damaging wildland fires, and because prescribed fire is proposed as a fuel treatment alternative in the planning area. The belief that fuel treatment can reduce the impacts of wildland fires has been common among fire managers for years, has been witnessed in the field, and has been demonstrated by a study completed in northeast Oregon (Schaaf 1996).

The prescribed fire modeling scenarios contain two estimates of current types and levels of prescribed fire activity. The wildland fire modeling scenarios also contain two estimates of impacts and were based on average acres burned in actual wildland fire occurrence scenarios. An analysis of specific levels of prescribed fire proposed in each alternative could not be conducted.

Particulate emissions and heat release rates were calculated for prescribed fires and wildland fires in pinyon-juniper and sagebrush/grassland vegetation areas using the Simple Approach Smoke Estimation Model. A total of four fire scenarios were modeled. The modeled concentration estimates were compared to the 24-hour National Ambient Air Quality Standards for particulate matter (for both PM_{10} and $PM_{2.5}$) developed under the Clean Air Act. The 24-hour National Ambient Air Quality Standards for PM_{10} is 150 micrograms per cubic meter. National Ambient Air Quality Standards for $PM_{2.5}$ has been established at a 24-hour value of 65 micrograms per cubic meter. Threshold values equivalent to these two concentrations were used to evaluate air quality impacts of the prescribed burning and wildland fire emissions. Model predictions do not represent worst-case scenarios and are not cumulative impacts of all sources (e.g., mines, power plants, and area sources such as automobiles, trucks, and off-highway vehicles); rather, this modeling analysis evaluated relative impacts of wildland fires and management-ignited prescribed fires on a local scale. While this approach is appropriate for an RMP/EIS, it cannot be used to assess impacts of burning on attaining the National Ambient Air Quality Standards at any individual location.

The modeling effort used meteorological data that was representative of the prescribed fire and wildland fire seasons. The analysis assumed that prescribed fires would be ignited at 11:00 a.m., which would result in the release of the bulk of the emissions during the unstable daytime hours when vertical mixing would be enhanced and the smoke plume likely would be diluted relatively quickly. Some prescribed fires are active during the stable nighttime hours and have the potential to produce higher ground-level impacts due to lower plume heights and less favorable dispersion conditions. It also was assumed that the size of the source area is equal to the acreage burned, which may tend to over estimate the local dilution of pollutants, particularly during the early portion of the fire. It is thus possible that this analysis under-estimates the amount of particulate matter and subsequent air quality impacts associated with each prescribed burning scenario.

Model outputs include tables showing maximum concentrations of particulates for each scenario. **Table 4.2-1** depicts the relative impacts for several different stability and wind speed categories and compares the predicted concentrations to the National Ambient Air Quality Standards for PM_{10} (150 micrograms per cubic meter). **Table 4.2-2** depicts the relative impacts for several different stability and wind speed categories for $PM_{2.5}$ and compares the predicted concentrations to the National Ambient Air Quality Standards of 65 micrograms per cubic meter. Caution must be used in interpreting these results, since the concentrations only can be compared on a relative basis for each of the defined scenarios.

The predicted concentrations of particulate matter for the prescribed fire scenarios are substantially lower than the wildland fire scenarios for several reasons: 1) higher fuel moisture levels during management-ignited prescribed fires compared to wildland fires generally result in less fuel consumed per acre of prescribed fire than per acre of wildland fire; 2) smoke dispersion conditions during the spring and fall prescribed burn episodes are better; and 3) prescribed fires are dispersed across the landscape, rather than being concentrated in a few locations. Although a compensating factor is the larger buoyancy and potentially higher plume rise of the wildland fire plumes compared to the smaller prescribed fire plumes, the wildland fire plumes eventually mix down to the ground and result in higher ground-level concentrations of particulate matter.

Ozone is a byproduct of prescribed burning, but these fires are generally spatially and temporally dispersed, so potential ozone exposures from prescribed fire are infrequent (Sandberg and Dost 1990). Carbon monoxide is rapidly diluted at short distances from a prescribed burn and poses little or no risk to community health (Sandberg and Dost 1990). Other non-criteria, but potentially toxic, pollutants (e.g., polynuclear aromatic hydrocarbons and aldehydes) are emitted by prescribed burning. These criteria pollutants are not likely to have an impact on public health because of the small levels produced and the rapid dilution or modification of these substances within relatively short time frames. Ozone and carbon monoxide also are produced by wildland fire.

Table 4.2-1
Model Results Showing Relative PM_{10} Projected Concentrations for Prescribed Fires and Wildland Fires in Pinyon-juniper and Sagebrush/grassland Burn Areas[1]

		Maximum Concentration (micrograms per cubic meter)			
Stability	**Wind Speed (miles per hour)**	**Pinyon-juniper Prescribed Fire**	**Pinyon-juniper Wildland Fire**	**Sagebrush/ grassland Prescribed Fire**	**Sagebrush/ grassland Wildland Fire**
Excellent	1.0	43.4	139.6	88.3	231.9
Excellent	2.0	43.4	142.9	94.2	126.2
Excellent	3.0	43.4	116.3	81.7	86.7
Excellent	4.0	43.4	94.2	68.1	65.7
Excellent	5.0	44.7	78.2	57.3	52.8
Good	2.0	43.3	142.1	88.5	214.6
Good	3.0	43.3	148.9	94.8	146.8
Good	4.0	43.3	136.8	92.0	113.8
Good	5.0	43.4	121.5	84.6	92.5
Good	6.0	43.4	107.5	76.5	77.7
Good	7.0	43.5	95.7	69.0	66.9
Good	8.0	43.5	85.8	62.5	58.8
Good	9.0	44.8	77.6	56.9	52.4
Good	10.0	46.0	70.7	52.1	47.2
Fair	4.0	43.4	144.0	90.0	213.9
Fair	5.0	46.6	149.4	91.4	183.2
Fair	6.0	46.6	149.3	94.6	149.4
Fair	7.0	43.3	144.7	94.6	130.7
Fair	8.0	43.3	138.0	92.5	115.9
Fair	9.0	43.3	130.5	89.2	104.0
Fair	10.0	43.3	123.0	85.4	94.2
Poor	1.0	332.2	479.9	334.5	483.1
Poor	2.0	210.1	302.3	210.7	304.3
Poor	3.0	160.3	230.7	149.4	232.3
Poor	4.0	122.8	190.4	124.8	191.7
Poor	5.0	105.8	164.1	108.5	165.2

[1] The particulate matter (10 microns or less) standard used is 150 micrograms per cubic meter.

Effects on visibility resulting from smoke production by the various prescribed fire and wildland fire scenarios also were assessed using the Simple Approach Smoke Estimation Model. Results indicate that these modeled scenarios would have little impact on visibility at distances of 50 and 100 miles. At lesser distances, increased haziness (a reduction in viewing distance and ability to detect finer features on the landscape) likely would result from the increases in prescribed burning. Large wildland fires likely would result in more of the planning area affected by haze. It can be inferred that the higher concentrations of emissions associated with these wildland fires would reduce visibility in affected areas more so than the highest levels of prescribed fire.

Table 4.2-2
Model Results Showing Relative $PM_{2.5}$ Projected Concentrations for Prescribed Fires and Wildland Fires in Pinyon-juniper and Sagebrush/Grassland Burn Areas[1]

Stability	Wind Speed (miles per hour)	Maximum Concentration (micrograms per cubic meter)			
		Pinyon-juniper Prescribed Fire	Pinyon-juniper Wildland Fire	Sagebrush/ grassland Prescribed Fire	Sagebrush/ grassland Wildland Fire
Excellent	1.0	36.6	126.8	78.3	191.3
Excellent	2.0	36.6	124.6	78.3	115.4
Excellent	3.0	36.6	105.7	71.4	79.9
Excellent	4.0	36.6	87.2	56.2	54.2
Excellent	5.0	37.7	73.1	47.3	43.6
Good	2.0	36.6	126.8	78.3	177.0
Good	3.0	36.6	126.8	78.3	131.4
Good	4.0	36.6	120.1	77.5	102.6
Good	5.0	36.6	108.6	72.8	83.6
Good	6.0	36.7	97.2	63.1	64.1
Good	7.0	36.7	87.2	56.9	55.2
Good	8.0	36.8	78.6	51.6	48.5
Good	9.0	37.9	71.3	46.9	43.2
Good	10.0	38.9	59.8	43.0	38.9
Fair	4.0	36.6	126.8	78.3	176.5
Fair	5.0	39.4	126.8	78.3	151.2
Fair	6.0	39.4	126.8	78.3	130.9
Fair	7.0	36.6	124.5	78.3	114.9
Fair	8.0	36.6	119.9	77.5	102.1
Fair	9.0	36.6	114.3	75.4	91.8
Fair	10.0	36.6	108.3	72.7	83.2
Poor	1.0	280.8	405.5	276.0	398.6
Poor	2.0	177.5	255.5	173.8	251.1
Poor	3.0	135.5	195.0	132.7	191.6
Poor	4.0	111.8	160.9	109.5	158.1
Poor	5.0	96.4	138.7	94.4	136.3

[1] The particulate matter (2.5 microns or less) standard used is 65 micrograms per cubic meter.

Conclusion. Under the Proposed RMP, as watershed analyses are completed and projects are implemented to meet or maintain rangeland health standards, fire management would expand as a tool in vegetation management to approximately 8.9 million acres. In the long term, this approach likely would result in more small fires and fewer major fires producing fewer emissions in the planning area compared to recent historic (last 30 years) levels. Short-term impacts could include larger and more frequent fires plus increased fugitive dust from recreational events impacting air quality. Mitigation measures would be applied where appropriate to help maintain air quality. In the long term, the Proposed RMP would meet the goal of the air resources program and maintain compliance with federal and state air quality standards.

Alternative A

Impacts from Air Resources Management Actions. Air quality impacts would be the same as discussed for the Proposed RMP.

Impacts from Other Programs. Air quality impacts associated with lands and realty, and renewable energy would be generally similar to those under the Proposed RMP.

Vegetation. Vegetation treatments would be conducted at substantially lower rates and over a smaller area than in the Proposed RMP. Thus, effects to air quality would be reduced in comparison with the Proposed RMP.

Travel Management and Off-highway Vehicle Use. Impacts from travel management and off-highway vehicle use would be similar to the Proposed RMP except that generation of fugitive dust emissions would continue over widespread areas of the planning area, since travel would not be restricted to designated roads and trails.

Recreation. This alternative would involve a single special recreation management area (Loneliest Highway Special Recreation Management Area) of approximately 750,000 acres providing both motorized and non-motorized recreational opportunities. Impacts to air quality (dust emissions) from recreation on this area and from permitted off-highway vehicle events would be relatively similar to that of the Proposed RMP.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres presently are available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Fire Management. The Ely Fire Management Plan, which incorporates the Ely Managed Natural and Prescribed Fire Plan, would continue to be implemented. This would result in the use of fire (prescribed throughout the planning area and wildland fire use on approximately 3.6 million acres) as a tool on a more limited basis than the Proposed RMP. In the short-term, this could result in more smoke emissions from larger and more frequent wildfires. However, in the long-term, smoke emission would likely be greater than in the Proposed RMP due to areas still being vulnerable to larger and more frequent wildfires.

Conclusion. Short-term impacts of fugitive dust from recreational events and smoke emissions from larger and more frequent wildfires would impact air quality. In the long-term, implementation of the existing Ely Fire Management Plan, which incorporates the Ely Managed Natural and Prescribed Fire Plan, would not reduce the smoke emissions from wildfires as much as in the Proposed RMP. Alternative A would meet the goal of the climate and air quality program in the short term, but would not meet the goal over the long term.

Alternative B

Impacts from Air Resources Management Actions. Air quality impacts would be the same as discussed for the Proposed RMP.

Impacts from Other Programs. Air quality impacts associated with vegetation, lands and realty, renewable energy, travel management and off-highway vehicle use, geology and mineral extraction activities, and fire management would be similar to those described for the Proposed RMP.

Recreation. Three of the nine proposed special recreation management areas in this alternative would emphasize off-highway vehicle use in a total area of approximately 844,000 acres. This is a greater acreage involving such use than under the Proposed RMP and would likely contribute to greater dust emissions on these areas.

Conclusion. This alternative would likely result in the same impacts as the Proposed RMP. Alternative B would meet the goal of the climate and air quality program.

Alternative C

Impacts from Air Resources Management Actions. Air quality impacts would be the same as discussed for the Proposed RMP.

Impacts from Other Programs. Air quality impacts associated with vegetation, lands and realty, renewable energy, travel management and off-highway vehicle use, and geology and mineral extraction would be similar to those described for the Proposed RMP.

Recreation. Four of the nine proposed special recreation management areas in this alternative would emphasize off-highway vehicle use in a total area of approximately 1.1 million acres. This is a greater acreage involving such use than under the Proposed RMP and would likely contribute to greater dust emissions on these areas.

Fire Management. Alternative C involves emphasis on full suppression of all wildland fires. However, this approach is expected to result in increased large fuel loading, higher probabilities of large-scale fire events, and potentially major emissions associated with large fires.

Conclusion. In the short term, air quality impacts from fire could be lessened over the present. In the long term, air quality is likely to be impacted by increased recreation activity in comparison to the Proposed RMP and greater numbers of large-scale fires producing more emissions. Alternative C would not meet the goal of the climate and air quality program.

Alternative D

Impacts from Air Resources Management Actions. Air quality impacts associated with fire management would be the same as discussed for the Proposed RMP. Since no land use authorizations would be made under Alternative D, no impacts from development proposals outside the Ely Field Office are anticipated.

Impacts from Other Programs. Alternative D would prohibit all permitted, discretionary activities including lands and realty actions, renewable energy development, cross-country off-highway vehicle travel, and recreational activities requiring permits. Therefore, there would be no impacts for these other programs under this alternative.

Vegetation. Vegetation treatments would be greatly reduced in comparison to the other alternatives. Thus, direct effects on air quality would be minimal.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Fire Management. Alternative D involves emphasis on minimal suppression of fires (estimated at 2 to 5 percent) except to protect life and property. In the short and long term, this alternative would result in a greater frequency of large fires with a corresponding increase in emissions of particulate matter in relation to the other alternatives.

Conclusion. Air quality would be impacted in both the short term and long term by an increased probability for occurrence of large-scale fire events. Alternative D would not meet the goal of the climate and air quality program.

4.3 Water Resources

Impact Issues – Groundwater

Several groundwater basins within the planning area have been designated by the Nevada State Engineer for more intensive water rights administration. Demand for municipal and industrial water supplies continues to increase within the state and region. Agricultural water demand and consumption (320,000 acre-feet/ year) is anticipated to remain relatively constant through year 2020 for the combined Lincoln, Nye, and White Pine county region (Nevada Division of Water Planning 1992). Evapotranspiration consumes a substantial portion of the annual groundwater recharge in the planning area. Vegetation communities withdraw soil moisture from rangeland soils throughout the entire growing season. Evapotranspiration rates depend on the types of species involved, climatic factors, and the amounts of soil moisture available. Riparian/wetland areas have limited extent within the planning area, and form a small portion of the vegetation treatment alternatives (see Chapter 2.0, Vegetation). Upland woody plant communities also affect groundwater recharge and availability by placing large demands on soil moisture and adjoining groundwater resources. Vegetation composition, cover and spatial distribution can affect infiltration and runoff characteristics, which in turn affect groundwater recharge. Therefore, vegetation management will affect groundwater resources and stream baseflows. Groundwater quality issues are addressed in accordance with the Clean Water Act and state agency agreements as identified in Section 3.3.3.

Impact Issues – Surface Water

A consideration in watershed-oriented land management is the re-establishment of desirable surface water flow and water quality attributes. Both factors play a major role in ecological health. Stream flows vary in response to the frequency and duration of runoff from snowmelt or rainfall, withdrawals by vegetation and water rights holders, and gains from groundwater. Agricultural withdrawals remove substantial proportions of surface water flows from perennial or intermittent streams. Surface water quality is a function of: 1) discharge into streams, lakes, and wetlands from industrial and agricultural sources, 2) livestock and wildlife use of riparian/wetland areas, 3) soil and rock characteristics, and 4) topography, and 5) riparian and upland plant communities. Industrial dischargers (e.g., mines) are regulated by the Nevada Division of Environmental Protection and required to obtain a National Pollutant Discharge Elimination System permit.

On BLM-administered lands in Nevada, interagency cooperative agreements address water quality issues. A major agreement is the Memorandum of Understanding for Water Quality Management Activities between BLM and the Nevada Division of Environmental Protection, as described in Section 3.3.3. Dispersed agricultural discharges are regulated by the Nevada Division of Environmental Protection, Bureau of Water Quality Planning, under the Nonpoint Source Pollution Management Program. The Ely Field Office has water quality management responsibility (Clean Water Act §313; Executive Order 11514 as amended by Executive Order 11991) for all resource management activities carried out on public lands in the planning area in the same manner and to the same extent as any non-governmental entity. Through the implementation of best management practices (Proposed RMP) and standard operating procedures (Alternatives A through D), the Ely Field Office prevents or controls, to the maximum extent practicable, nonpoint source pollution and achieves relevant state water quality requirements in the planning area.

Watershed analysis processes evaluate indicators associated with water quality in the evaluation and determination of Resource Advisory Council Standards and Guidelines. Where standards are not met, causal factors are identified and interdisciplinary teams make recommendations to meet the standards and conform to guidelines.

Assumptions for Analysis

- Management activities that sufficiently reduce evapotranspiration in areas conducive to groundwater recharge and discharge would encourage greater magnitudes and durations of flows at springs and adjacent stream reaches.

Interactions with Other Programs

Water resource management objectives within the planning area would be incorporated in accordance with Clean Water Act requirements (Clean Water Act §313) into all resource management programs and all proposed actions including: vegetation, wild horses, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, watershed management, fire management, noxious and invasive weed management, health and safety, and lands and realty.

Goal

The quality of water resource on public lands administered by the Ely Field Office will be suitable for the appropriate beneficial uses and will meet approved federal, state, tribal, and local requirements, guidelines, and objectives. The quantity of water on public lands administered by the Ely Field Office will be suitable to meet public land management purposes.

Northeastern Great Basin Resource Advisory Council Standard. Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

Objective

To protect the chemical, physical, and biological integrity of waters as needed to maintain healthy ecological systems and provide values that support multiple uses. Acquire and perfect sufficient water rights to meet public land management needs.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to water resources also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Water Resources Management Actions. Specific management actions applicable to the Proposed RMP are given in Section 2.4.3, Water Resources. Resource goals and activities identified in Interactions with Other Programs provide general resource management. When carried out, these management actions would maintain or enhance water resources. Additional discussion of the watershed planning framework and related guidance for water resources and related aquatic habitats or species is presented in Appendix A.

Impacts from Other Programs.

Vegetation. By achieving the desired range of conditions for vegetation under the Proposed RMP the rate of expansion of pinyon and juniper into sagebrush sites would be reduced or reversed, areas of overmature sagebrush communities would be reduced, and perennial herbaceous understory species would increase. In addition to lower transpiration demands, the desired range of conditions for vegetation would decrease surface runoff and increase infiltration rates on upland sites in the long term. In areas where treatment disturbance occurs, runoff water quality may temporarily decrease in the short term, but in the long term, water quality and quantity would increase. The selection of treatment methods best adapted to a given site, and the application of best management practices would minimize accelerated erosion and water quality deterioration in the short term. Over the long term, selected treatments also would improve water retention, slow runoff, and decrease erosion and suspended sediment. Improved water retention also would lower flood stages, reducing channel erosion and the risk of other stream channel impacts. The magnitude of these improvements would increase as the proportion of vegetation in the desired range of conditions within the planning area also increases.

The success of vegetation treatment actions in giving rise to more available water for use depends on many factors, including plant community characteristics, the characteristics of precipitation events, soil and geology characteristics, topography, management of wild horses and livestock grazing, the types of vegetation treatments and restoration activities employed, and the length of time since such activities.

Some research suggests that vegetation modifications are not likely to enhance water yield where mean annual precipitation averages less than about 450 to 500 millimeters (17.7 to 19.7 inches) (Hibbert 1983, Wilcox 2002). The arid and semi-arid portions of the planning area fall into this category, where the potential increases in available soil moisture from vegetation conversion would probably be lost to evapotranspiration. Other sources suggest that subsurface water yield may be increased in some settings by removal of both trees and sagebrush cover in arid and semi-arid areas of the Great Basin (Eddleman and Miller 1991). Increases in soil moisture and groundwater recharge may occur in portions of the planning area. These effects would be most likely to occur in the vicinity of springs and nearby streamcourses where thin soils and shallow depths to fractured bedrock occur. This is consistent with past observations on the planning area (Medlyn 2004). Stream baseflows may be expected to increase in flow and duration in some locales. Effects on surface water would vary locally and among watershed areas. At some locations, springflows may increase, and would be likely to stabilize, preventing further spring flow degradation where it now occurs as a result of current vegetation conditions.

Removal of nonnative phreatophytic vegetation or upland species of trees and shrubs in wetlands and recharge zones would increase water available for desirable plant growth, groundwater recharge, and base flows. If conducted over the long term, tamarisk control along stream courses may reduce the phreatophytic consumption of groundwater resources. At selected sites, control efforts would mitigate the trend toward increasing site salinity that occurs under tamarisk as well. Tamarisk control along stream courses may reduce salinity levels in adjacent waters caused from overland flows during flood events, however the full extent of this is not well quantified. Tamarisk treatments for control of salinity in the Colorado River in the planning area would be small compared with all of the salinity in the river flow originating from geologic and agricultural sources outside the planning area.

Fish and Wildlife and Special Status Species. Increased emphasis on management of habitat for aquatic species, including several special status species, would result in enhanced stream and riparian ecological conditions, more stable base flows, and improved water quality.

Lands and Realty. Land disposals and subsequent development activities on approximately 75,600 acres could contribute to increased erosion. Additional municipal and residential development would place further demands on water resources. Increased need for domestic and industrial water supplies would affect the quantity of water available for other uses. The reasonably foreseeable demand for water related to land sales and subsequent development is estimated to be 1 acre-foot per year per acre of land developed. Discharges from water treatment works would be recycled. Municipal stormwater runoff would affect water quality. By concentrating rights-of-way in corridors and communication facilities at existing sites, associated construction and maintenance disturbances would be centralized to minimize impacts to water resources.

Renewable Energy. Development of renewable energy facilities will result in increased disturbance of soil surface, additional road construction, increased potential for erosion and sedimentation into streams and increased demand for water resources. Based on the reasonably foreseeable development scenario, a maximum of 4,000 acres is expected to be temporarily disturbed for construction of renewable energy facilities within the planning area during the life of this plan. This area would include several separate facilities constructed at different times. Thus, the acreage disturbed at any one time and contributing to local erosion and sedimentation would be a small fraction of this total. Development of projects would be evaluated for effects on water resources on a case-by-case basis, in accordance with NEPA. Impacts associated with these activities would be mitigated to the extent practicable thorough best management practices from the Wind Energy Programmatic EIS.

Travel Management and Off-highway Vehicle Use. Under the Proposed RMP, the restriction of off-highway vehicle use to designated roads and trails as determined through a subsequent public process and area-specific analysis would substantially reduce the potential for degradation of water quality and quantity. The impact to vegetation and soils would be less because of the restrictions, and hydrologic function would improve on a watershed basis.

Recreation. Impacts would be minimized by existing restrictions on recreational activities near drainages, emphasizing the use of existing developed recreational facilities and by limiting motorcycle and truck events to routes subject to NEPA analysis. Dispersed recreation, particularly in southern portions of the planning area, would increase potential erosion and sedimentation. Areas designated as special recreation management areas (approximately 1.2 million acres) under the Proposed RMP are not expected to interfere with water resources.

Forest/Woodland and Other Plant Products. The harvest of forest/woodland products (pinyon pine nuts, fuelwood, native seed gathering, and Christmas trees) would have little impact to water resources. There is minimal use, and those uses that do occur are so dispersed that the impacts are mitigated by management actions and best management practices.

Wild Horses and Livestock Grazing. Water is a limiting factor for wild horses and livestock. Water usage by livestock is estimated to be 10 gallons per animal unit per day. For the planning area this equates to about 550 acre-feet per year. These animals may congregate around available water sources and contribute to streambank and shoreline degradation, erosion, sediment transport, and water quality degradation. Watershed analyses and allotment evaluation for livestock grazing would continue and would focus on areas where Resource Advisory Council standards are not being met, and current livestock management is a causal factor. Livestock grazing will continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These allotments will continue to be monitored and evaluated. Changes to grazing use will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing use will be maintained for approximately 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to grazing use will be made as needed to meet RMP goals and objectives including the standards for rangeland health. Actions to conform to policies must occur with the start of the next grazing year. If wild horses are a causal factor, actions would occur to correct the problem by gathering to meet the appropriate management level in areas not closed to wild horses. These actions, over time and with good monitoring, would lessen the impact to water resources. These actions may include changes in the season of use for livestock, application of herding techniques, or, for both livestock and wild horses, fencing of riparian areas that are not meeting the standard. Water would be made available outside of the water source and riparian area to meet water needs and water rights. This would help mitigate impacts to water resources by minimizing the effects from livestock and wild horse grazing. In areas not available for livestock grazing (approximately 221,290 acres; see Section 2.4.16 and **Map 2.4.16-2**) and in areas no longer managed as herd management areas for wild horses (approximately 1.6 million acres; see **Tables 2.4-11 and 2.4-12**), site stability and water quality would improve at some springs and stream reaches.

Geology and Mineral Extraction. Approximately 17,100 acres (less than 0.5 percent), as estimated in the reasonably foreseeable development scenario, would be disturbed throughout the 11.5 million acres of the planning area. Water from surface and groundwater sources would be consumed by mining and drilling operations. Water quality potentially could be compromised by fuel or chemical leaks and spills or by introduction of contaminants into aquifers. Constraints on mineral entry and development may maintain water quality in local areas. The application of conditions of approvals and best management practices, such as those in the Gold Book, would further protect water resources.

Watershed Management. Forty-one high priority watersheds would be treated to achieve rangeland health standards and thereby improve water resources. The remaining twenty lower priority watersheds would wait longer to achieve rangeland health standards and water resources in these watersheds would remain in the short term as they currently exist. In the long term, however, they would improve as the low priority watersheds are treated to achieve the rangeland health standards. Overall, when standards are achieved, allocation of forage would be to first maintain standards and assure water resources are maintained in the long term.

Fire Management. In the long-term, the increased use of prescribed fire and wildland fire use (approximately 8.9 million acres available) would decrease the magnitude and frequency of wildland fires, thereby reducing water quality impacts. Evidence indicates that where prescribed fires and wildland fire use reduces trees and shrubs in shrub and grassland communities and tree canopy in woodlands, water yield also may increase under conditions favorable to groundwater recharge and discharge (Medlyn 2004; Eddleman and Miller 1991). Short-term impacts to water quality from wildland fires would be lessened through the development and implementation of emergency stabilization and rehabilitation projects following wildland fires. Best management practices for fire management are specified to minimize impacts to water resources.

Noxious and Invasive Weed Management. To minimize effects on water quality, herbicides selected for use would be applied in accordance with U.S. Environmental Protection Agency labeling and U.S. Fish and Wildlife Service biological opinion where applicable. Best management practices for herbicide applications are specified to minimize impacts to water quality. Air dispersal and prolonged residence time in soils may lead to contamination of water bodies when herbicides are used over a large area. Over time, most herbicides in soils would degrade.

Health and Safety. Chemical spills, or other hazardous materials could adversely affect water quality. The Ely Field Office has a response plan in place for containment, cleanup, and mitigation of such incidents on the public lands. Neither the probability nor the response to such incidents is expected to change substantially under the Proposed RMP.

Conclusion. Water resource conditions would be improved on a long-term basis as individual watersheds are analyzed and treated. During the short term, localized decreases of water quality may occur immediately following treatments. The potential for these effects would be minimized by the use of best management practices during the treatment process. Increases in water availability (mainly springflows and baseflows) may occur in local areas conducive to groundwater recharge and discharge. This alternative provides a suitable management framework to achieve the goals of the water resources program, including proper functioning condition of wetlands and riparian areas, and achievement of state water quality standards.

Alternative A

Impacts from Water Resources Management Actions. Specific management direction applicable to Alternative A is given in Section 2.5.3. Additional discussion of the watershed planning framework and related guidance for water resources is presented in Appendix A. The resource goals identified in Interactions with Other Programs provide general resource management direction.

Impacts from Other Programs. Water resource impacts associated with renewable energy, recreation, livestock grazing, noxious and invasive weed management, and health and safety would be the same as the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. The historic rate of vegetation treatment of approximately 10,000 acres per year would not be increased. The current rate of soil erosion and associated sediment load in streams may be sustained, but would be most likely to increase over the long term. The current rate of restoration would not keep pace with the loss of perennial herbaceous understory. Surface runoff would continue to accelerate erosion during major precipitation events, resulting in continued water quality degradation. At the current rate of treatment and restoration, woody species would proliferate. The surface water and groundwater available for use would continue to decline as a result of reduced infiltration and increased evapotranspiration. Reduction in plant cover following treatment would generate additional erosion temporarily, until perennial understory cover and near-surface root biomass exceed pre-treatment conditions. Erosion control measures provided in standard operating procedures and best management practices would minimize impacts to water resources following treatment or reseeding. Selective removal of trees and phreatophytic vegetation, including tamarisk, would affect water resources in a manner similar to that described for the Proposed RMP. These effects would occur over less extensive treatment areas than those described for the Proposed RMP.

Fish and Wildlife and Special Status Species. Protection would be provided as necessary on a case-by-case basis to maintain aquatic habitat for special status aquatic species.

Wild Horses. Water is a limiting factor for wild horses. It is estimated that approximately 550 acre-feet per year is used by wild horses and livestock within the planning area. Wild horses may congregate around available water sources and contribute to streambank, shoreline, and spring site degradation, erosion, sediment transport, and hence, water quality degradation. Under Alternative A, these effects would be expected to generally continue along current trends with wild horse use in 24 herd management areas. However, watershed analyses would indicate where Resource Advisory Council standards are not being met and wild horse grazing is a causal factor. If wild horses are a causal factor, then actions would occur to correct the problem by gathering to meet appropriate management levels. These actions would lessen the impact to water resources. Actions may include fencing of riparian areas that are not meeting the standard. Water would be made available outside of the water source and riparian area to meet water needs and water rights. This would help improve water resource conditions and mitigate impacts to water resources by minimizing the effects from wild horse grazing.

Lands and Realty. Land disposals (approximately 31,900 acres in Alternative A) and subsequent development activities could contribute to increased erosion and to long-term water demands. Water resources would be affected in a manner similar to that described for the Proposed RMP.

Travel Management and Off-highway Vehicle Use. Impacts associated with transportation use are expected to increase over time. The open designations of current management would continue to decrease watershed function and decrease water quality and quantity. It is expected that important parameters of hydrologic function related to vegetation and soils would degrade substantially in the long term.

Forest/Woodland and Other Plant Products. The harvest of forest/woodland products (pinyon pine nuts, fuelwood, native seed gathering, and Christmas trees) would have little impact to water resources. There is minimal use, and those uses that do occur are so dispersed that the impacts are mitigated by standard operating procedures and best management practices.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Watershed Management. Increases in forage from restoration treatments would be allocated to livestock. Treatments would be fewer and would not keep up with increasing plant transpiration demands and the loss of perennial herbaceous understory. Water resources would remain static. Water quality and watershed health would continue to decline. In the short term, those watershed treatments that would be undertaken could affect water quality. However, implementation of standard operating procedures and best management practices associated with treatment activities would minimize the impacts on springs, surface water flows, and water quality.

Fire Management. In the long term, the limited use of prescribed fire and wildland fire use (approximately 3.6 million acres available) would not decrease the magnitude and frequency of wildland fires as much as the Proposed RMP. Neither would this alternative reduce the impacts to water quality as much as the Proposed RMP. Short-term impacts to water quality from wildland fires would be lessened through the development and implementation of emergency stabilization and rehabilitation projects following wildland fires. Best management practices for fire management are specified to minimize impacts to water resources.

Conclusion. Since restoration currently does not keep pace with the decline in ecological trends, groundwater recharge and seasonal surface water flows would be expected to decline. Shorter term runoff events (e.g., thunderstorms, snowmelt) would continue to exhibit their current timing and volume, or may occur over shorter time scales and with somewhat larger volumes in watersheds where conditions continue to degrade. In general, water quality would continue to decline under Alternative A. Water consumption (primarily through evapotranspiration) would be expected to increase. This alternative does not provide a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.

Alternative B

Impacts from Water Resources Management Actions. Specific management direction applicable to Alternative B is given in Section 2.6.3 for water resources. Resource goals and activities identified in Interactions with Other Programs provide general resource management direction.

Impacts from Other Programs. Water resource impacts associated with fish and wildlife, special status species, wild horses, lands and realty, renewable energy, travel management and off-highway vehicle use, forest/woodland and other plant products, geology and mineral extraction, watershed management, fire management, noxious and invasive weed management, and health and safety management activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. The rate of vegetation treatments and proposed treatment areas under Alternative B would counteract the trend of expansion of pinyon and juniper into sagebrush sites and the loss of perennial herbaceous understory species. Extensive areas of sagebrush would be treated as well. Effects on water resources would be similar to those described for the Proposed RMP.

Recreation. As with the Proposed RMP, this alternative would restrict off-highway vehicle use to designated roads and trails, but it would create nine Special Recreation Management Areas with more than twice the acreage contained in the five to be created under the Proposed RMP. This greater acreage of concentrated recreational activity would be accompanied by increased areas subjected to soil erosion and sedimentation to nearby streams.

Livestock Grazing. Approximately 3.0 million acres of desert bighorn and Rocky Mountain bighorn sheep range and migration routes and 542,100 acres of desert tortoise habitat would be permanently unavailable for all livestock grazing under Alternative B. In general, this would help improve water resources conditions and mitigate impacts to water resources by minimizing the effects from livestock.

Conclusion. Water resource conditions would be improved on a long-term basis as individual watersheds are analyzed and treated. Major disturbance factors (i.e., grazing) would be removed over a large portion of the planning area. Similar to the Proposed RMP, policies and standards would be applied with selected tools and techniques that would further enhance water resource conditions over the long term. Localized, short-term increases in erosion and sedimentation may occur immediately following vegetation treatments. Such effects would be minimized by the implementation of best management practices during the treatment process. The substantially larger area of livestock closures under Alternative B would increase the likelihood of water resources improvements beyond those that would occur under the Proposed RMP. This alternative provides a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.

Alternative C

Impacts from Water Resources Management Actions. Specific management direction applicable to Alternative C is given in Section 2.7.3 for water resources. Resource goals and activities identified in Interactions with Other Programs provide resource management direction. When carried out, these management actions would maintain or enhance water resources. Increases in water availability (mainly springflows and baseflows) would occur in areas conducive to groundwater recharge and discharge.

Impacts from Other Programs. Impacts associated with fish and wildlife, special status species, wild horses, renewable energy, travel management and off-highway vehicle use, livestock grazing, geology and mineral extraction, watershed management, noxious and invasive weed management, and health and safety management would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. Aggressive treatment programs for vegetation would improve long-term water resources availability for use in areas conducive to groundwater recharge and baseflow. Effects would be somewhat greater than under the Proposed RMP and Alternative B. Shorter runoff response times, greater erosion, and increased suspended sediment would result in the short term, but these impacts would be minimized by current and future site-specific mitigation measures and rehabilitation efforts.

Lands and Realty. Impacts of lands and realty actions, especially potential disposals, would be similar in nature to those discussed for the Proposed RMP, but the area of potential disposal would be considerably greater at approximately 295,200 acres.

Recreation. As with the Proposed RMP, this alternative would restrict off-highway vehicle use to designated roads and trails, but it would create nine Special Recreation Management Areas with more than twice the acreage contained in the five to be created under the Proposed RMP. This greater acreage of concentrated recreational activity would be accompanied by increased areas subjected to soil erosion and sedimentation to nearby streams.

Fire Management. In the long term, suppression of all wildland fires would encourage heavy fuel accumulations throughout the planning area. Ultimately, wildland fires with greater intensities and durations would occur under this alternative than under other alternatives creating impacts to runoff, flooding, and suspended sediment conditions. During the period of full suppression and before widespread wildland fires remove the increasingly dense woody vegetation, it is expected that this vegetation would reduce spring discharge and surface flow in numerous locations. Short-term impacts could be lessened through development and implementation of emergency stabilization and rehabilitation projects.

Conclusion. In general, long-term improvements in water quality and water resources availability for uses would occur as a result of intensive vegetation management under Alternative C. Increases in seasonal water availability (mainly springflows and baseflows) would occur in areas conducive to groundwater recharge and discharge. Water usage and water quality degradation may occur in some areas as a result of livestock grazing and increased recreational developments. Over the long term, these effects would be combined with rapid runoff, increased flooding, and greater sediment yield encouraged by the fire suppression approach under this alternative. This alternative does not provide a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.

Alternative D

Impacts from Water Resources Management Actions. Specific management direction applicable to Alternative D is given in Section 2.8.3 for water resources. Resource goals and activities identified in Interactions with Other Programs provide general resource management direction. When carried out, these management actions would maintain or enhance water resources.

Impacts from Other Programs. Water resource impacts associated with fish and wildlife, special status species, noxious and invasive weed management and health and safety management activities would be similar to those described for Alternative A. The following impacts from interrelated programs would likely result from Alternative D.

Vegetation. Treatment programs under Alternative D would be limited in comparison to the Proposed RMP or Alternatives B and C, with focus on restoration of natural communities. As depicted in Chapter 2.0, different distributions of phases or states would exist among the various plant communities. Overall, vegetation management under this alternative would create only minimal increases in the water resources available for use over both the short and long terms. In some settings conducive to groundwater recharge, additional seasonal springflow and baseflow may occur. In other forested and shrub-dominated areas, potential evapotranspiration demands would remain high or increase. This may reduce the availability of water for other uses.

Wild Horses. Wild horses would proliferate without management controls within herd management areas. Increased grazing and trampling near streams, springs, and seeps would create water quality impacts in herd management areas. Similar effects on uplands would degrade understory conditions, contributing to reduced response times during runoff events, greater erosion, and increases in suspended sediment in and near herd management areas.

Livestock Grazing. Livestock would be removed from all public lands and would not be authorized on 11.3 million acres within the planning area as identified in the Proposed RMP (see Section 2.8.16). This would increase water quantity in the short term due to less consumption of water. Grazing and trampling near streams, springs, and seeps would be reduced, improving water quality over a wider area.

Lands and Realty. No net loss of public lands under this alternative may or may not create impacts on water resources. If lands acquired in exchanges contain areas conducive to groundwater recharge, additional springs or stream baseflows may become available for use. Similarly, if surface water features such as ponds or marshes were acquired through exchanges, water resources availability may increase. The utilization of any water resources increases would depend on allocation of water rights. If, as is most likely, acquired lands do not contain such conditions or features, then increases in water resources availability or improvements in water quality would not be anticipated.

Renewable Energy. No renewable energy projects would be approved; therefore, no impacts to water quality or quantity would result.

Travel Management and Off-highway Vehicle Use. With an extensive land area closed to travel and off-highway vehicles, water quality would improve on the planning area under this alternative. Little or no disturbance to either drainages or upland settings would help improve water resources.

Recreation. Water quality and availability of water resources for other uses would improve with closure of developed recreational sites and cessation of vehicle events under this alternative.

Forest/Woodland and Other Plant Products. Management of woodland and plant products under this alternative would have little impact on water resources. Although no fuelwood or Christmas tree harvesting would be allowed, the potential impacts on water resources of these approaches would be greatly overshadowed by other resource approaches.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP. Water quality improvements are not likely to occur from the absence of further mineral or fluid extraction activities. The potential for water quality degradation from such activities would be avoided; however, such impacts would have been limited by existing regulations. Groundwater resources would not be used for mineral extraction.

Watershed Management. Watershed analysis priorities would be the same as for the Proposed RMP. Watershed treatments to meet standards or conformance to policies would be limited to weed treatments and conversion of existing exotic plant seedings (such as crested wheatgrass). Water resources impacts would be less than the Proposed RMP in the short term and greater in the long term.

Fire Management. Under Alternative D, no suppression of wildland fire would occur except for human-caused and those that threaten life and/or property. In the short and long term, this would result in larger and more frequent wildland fires occurring in areas where they may not be beneficial. This would result in impacts to water quality. By not developing and implementing emergency stabilization and rehabilitation projects following wildland fires, the impacts to water quality would not be lessened. In addition, by not instilling resilience through various tools in areas that need restoration before wildland fire can be reintroduced, impacts to water quality would not be reduced in the long-term.

Conclusion. In general, improvements in water quality and water resources availability for uses would not be extensive as a result of management under Alternative D. Small increases in seasonal water availability, primarily in limited areas conducive to groundwater recharge and discharge, would occur. More stable watershed conditions and water quality improvements would occur in the short term as a result of recreation and livestock management approaches. This would be offset by watershed deterioration due to heavy overuse by wild horses within the herd management areas as populations rapidly expand. Over the long term, however, these improvements would be overshadowed by the fire management approach under this alternative, which would lead to widespread major fires that ultimately encourage rapid runoff, flooding, and sediment yield. This alternative does not provide a suitable management framework to achieve the goals stated for the water resources program, including the Resource Advisory Council Standard.

4.4 Soil Resources

Impact Issues

Soil resources are fundamental to all land management programs. Soil information is a critical part of the watershed analyses. Soil – vegetation correlations are used to identify ecological site potential for management. Soils are managed to minimize erosion and compaction. Soil quality affects the states and transitions of plant communities.

Assumptions for Analysis

- Impact assessments for soil resources assume that successful restoration of vegetation from current conditions to the desired range of conditions for a specific watershed in combination with suitable tools and techniques for treatment would enhance soil quality.

Interactions with Other Programs

The soil resource management program within the planning area potentially would be affected by actions within the resource management programs for vegetation, wild horses, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, watershed management, fire management, and noxious and invasive weed management.

Goal

Maintain or improve long-term soil quality.

Northeastern Great Basin Resource Advisory Council Standard. Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and landform.

Mojave/Southern Great Basin Resource Advisory Council Standard. Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.

Objective

To ensure that soils throughout the planning area exhibit infiltration and permeability appropriate to the soil type, with erosion and compaction having minimal effect on soil quality.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to soils also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Soil Management Actions. Specific management actions for soil resources are identified in Section 2.4.4 for the Proposed RMP. In addition, the resource goals and activities identified for soil resources (see Interactions with Other Programs) further guide management directions. When carried out, these management actions would conserve soil resources, minimize erosion and sedimentation, and maintain or improve long-term soil quality.

Impacts from Other Programs.

Vegetation. Under the Proposed RMP, efforts to achieve the desired range of conditions would have the potential to increase treatments substantially over current levels, resulting in substantially greater amounts of short-term ground disturbances. Where vegetation modifications interface with cheatgrass understories, herbicides may be used on a wide scale to achieve desired conditions. Other strategies may be selected for application in selected pinyon/juniper, salt desert shrub, and sagebrush communities. In the short term, reductions of vegetation canopy cover and the associated soil root mass may increase soil vulnerability to surface runoff and erosion, particularly on slopes. Best management practices would minimize potential impacts to soils. With successful treatments, the short-term risks would be offset by increased herbaceous understory and near-surface root biomass in the long term. These factors are expected to reduce erosion and improved soil quality.

For some big sagebrush and Utah juniper communities in the region, research has shown a trend of higher infiltration rates and lower sediment production for treated sites as compared to their untreated counterparts (Blackburn and Skau 1974). These results indicate that in large areas of Nevada, decades are required for a vegetation treatment to make a statistically-significant improvement in infiltration rates. Also, although general trends may improve, if the interspaces between soil and litter accumulations under grass and shrubs already have well-aggregated granular structure, a statistically-significant change in infiltration or sediment yield may not result from vegetation treatments (Blackburn and Skau 1974). The occurrence of beneficial changes would depend on initial site characteristics and the types of treatments, which would be evaluated and monitored as part of proposed treatments. Since perennial herbaceous understory cover is declining on the planning area in areas of encroaching woody species and annual invasive weeds, and since this has been linked to poorer infiltration and unstable soil surface horizons (Blackburn 1975; Blackburn and Skau 1974), selective vegetation treatments over more widespread areas under the Proposed RMP would be expected to improve overall soil quality.

Lands and Realty. Lands and realty program administers rights-of-way and special uses on the planning area, including communication sites and utility corridors. These activities affect soil to the extent that ground disturbances are involved. All permits, leases, and contracts are administered with soil conservation measures such as topsoil salvage and reclamation. Impacts associated with those activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Wild Horses. Under the Proposed RMP, herd management would consider the ecological health of areas having marginal or inadequate habitat to sustain wild horse herds. Emphasis would be placed on benefiting soil resources and the correlated vegetation communities. Elimination of wild horses on approximately 1.6 million acres of marginal habitat would benefit the soil resources of these areas.

Renewable Energy. Construction and access roads associated with renewable energy projects up to 4,000 acres of disturbance generally are the greatest contributor to erosion. Many roads act as berms capturing sheet flow from runoff and snowmelt and converting it into channel flow along the roads during peak flows. This causes scour in downstream areas, resulting in erosion and sedimentation. The severity of this impact is largely a function of traffic volumes, road design, surfacing, geology, vegetation, and topography. Although it may presently occur on a localized basis, increased management activity and human visitation over time could result in more widespread impacts over the long term. These effects can be minimized by application of best management practices.

Travel and Off-Highway Vehicle Use. Off-highway vehicle use would be restricted to designated roads and trails as determined through a subsequent public process and area-specific analysis on approximately 10.3 million acres. This would substantially reduce the potential for degradation of soil resources as compared to the current management. The potential effects on soil resources (notably compaction and accelerated erosion) from vehicle use would decrease from those anticipated under current trends, since the overall land use planning emphasis would be on ecological system health and resiliency. More concentrated uses of off-highway vehicles and motorcycles on designated roads and trails would increase soil compaction, erosion, and sedimentation in those designations but curtail damages that would occur in other parts of the decision area with the current open designation.

Recreation. Management of recreational activities on the planning area has the potential to concentrate and disperse public use of a large portion of eastern Nevada. Where recreation is concentrated, such as campgrounds, trails, and trailheads, soil compaction is a predictable consequence. Areas designated as special recreation management areas (approximately 1.2 million acres) under the Proposed RMP are not expected to interfere with soil resources. Use would be restricted to designated roads and trails, substantially reducing the potential for uncontrolled recreational off-highway vehicle use. Reduction in uncontrolled recreational use of roads, trails, and rangelands would reduce dispersed compaction and accelerated erosion. Motorcycle and truck race events managed through special recreation permits can have substantial impacts on soils along race courses. Such impacts would be considered and minimized as part of event-specific permit conditions.

Livestock Grazing. Management of livestock on rangelands affects soil resources by regulating the extent, intensity, and frequency of herd presence on soil surfaces. These factors strongly influence the potential for grazing to affect soil physical properties (compaction and erosion), chemical properties (near-surface soil chemistry) and biological properties (microbiology). The most noticeable impacts occur around water bodies, salt blocks, fencelines, and other areas where animals frequently congregate. In such areas, increased soil resource impacts from compaction and increased erosion losses would be expected. In contrast, dispersed distribution and periodic rotation of livestock would be expected to widen the extent of soil resource impacts, but lessen their intensity. This would be expected to decrease the overall impacts to soil resources and improve their overall resiliency to grazing effects. However, for any given livestock management approach, the degree of grazing effects on soil resources varies proportionally with the numbers of livestock involved and differs for different kinds of livestock. Livestock grazing will continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing will be maintained for 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use will be made as needed to meet or progress toward achievement of the standards. These actions would lessen the impacts to the resource.

Forest/Woodland and Other Plant Products. Under the Proposed RMP, vehicle traffic associated with woodland and plant product harvesting would be limited to existing roads and trails except for site-specific approvals.. Staying on roads and trails would help lessen the impacts associated with gathering of these products.

Geology and Mineral Extraction. The Proposed RMP generally would allow mineral extraction throughout the planning area except for the closures identified in the geology and minerals extraction sections of Chapter 2.0. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (less than 0.5 percent of the planning area), would be disturbed by mineral extraction. Mineral extraction projects involve the potential for soil compaction, erosion, excavation, and losses of soil quality in these areas. The effects of surface disturbance on soils vary based on soil type, texture, moisture content, depth, and slope. Vegetation removal for roads and well pad construction can alter existing drainage patterns and contribute to accelerated gully and rill erosion, especially on steeper slopes. Soil compaction would be expected on areas utilized by heavy equipment for oil and gas exploration, development, and production. Compaction typically is greatest when soil moisture is high and where heavy equipment activities are concentrated. Soil compaction reduces vegetation productivity because it decreases root penetration and water infiltration. Within the State of Nevada, a Memorandum of Understanding for exploration and mining reclamation exists between the BLM and the Nevada Division of Environmental Protection. Reclamation permits are supported by site-specific reclamation plans which are submitted and maintained according to an agency review and approval process. If approved, a permit defines post-project land uses, growth media salvage and replacement, seedbed amendments and erosion controls, site drainage, public safety provisions, roads, recontouring and revegetation practices, post-treatment monitoring, and other site restoration considerations according to best management practices. As a result, and given the comparatively small extent of mineral exploration and extraction acreage in the planning area, the effects of these activities on soil resources are expected to be minimal. These impacts would be mitigated through the use of management actions and best management practices given in Appendix F, Section 1, and other conditions of approval imposed during the permitting process on a specific site-by-site basis.

Watershed Management. Watershed management actions under the Proposed RMP would restore and maintain resistance and resiliency in plant communities by processes outlined for watershed analysis, in the short term on 41 high priority watersheds. Soil quality would be maintained or enhanced through this type of approach. The short term effects of initial management actions developed through this process could cause accelerated erosion and temporary loss of soil quality. These effects would be mitigated though site-specific use of best management practices. In the long term, overall conditions would be improved with increased soil quality and reduced erosion. Current trends of soil compaction, erosion, and productivity losses would be mitigated or reversed under the Proposed RMP. Since additional forage would be allocated first to watershed maintenance, impacts to soil quality would be minimal.

Fire Management. The Proposed RMP would make extensive use of prescribed fire and wildland fire use on approximately 8.9 million acres. As a result, short-term increases in soil erosion rates would be expected, along with short-term increases in nutrient status. In locations where intense fires occur, short-term water repellency may result. Development and implementation of emergency stabilization and rehabilitation projects would reduce these impacts. The effects of fires on soil erosion would be reduced by implementation of planned fire projects and rehabilitation efforts. Long-term soil quality would improve with greater moisture infiltration as herbaceous cover is restored. As vegetation resilience is restored to aid in achieving and maintaining resilience, wildland fire use would be allowed to occur, resulting in less fire-related impacts to affected soils. Short-term soil disturbance would occur during fire suppression activities (e.g., fireline construction) from the use of hand tools and machinery. These impacts can be reduced through the development and implementation of emergency stabilization and rehabilitation projects.

Noxious and Invasive Weed Management. Chemicals used to treat weeds and undesirable brush may enter the soil and remain active for lengthy periods, or may only persist for a few days or weeks (EXTOXNET 1996). This influences the potential for offsite migration by leaching or soil blowing, as well as the potential for animal ingestion or inhalation. In addition, herbicide formulations vary in their strength of adsorption to soil mineral and organic particles (EXTOXNET 1996). This also influences environmental fates and effects, particularly the quality of surface runoff and groundwater. Once they enter a water body, herbicides vary in their persistence and toxicity to aquatic life (EXTOXNET 1996).

Removal of weeds temporarily reduces plant cover locally. This increases soil vulnerability to splash erosion and sheet flow, particularly on slopes. The potential for corresponding impacts on soil resources depends on such factors as slope, surface texture (including stoniness or gravel veneers), the amount of vegetation cover removed, and the timing of vegetation control activities.

The removal of tamarisk along streams and in riparian habitats on the planning area may affect soil conditions. Although tamarisk is a nonnative invasive and undesirable species, its root system does provide a soil stabilization role. This is particularly true of dense stands in floodprone settings. Removal of large contiguous areas of tamarisk may contribute to soil erosion and sedimentation as the plant cover and root mass is removed. Related impacts on surface water quality, including salinity contributions, also may occur. To minimize the potential for such effects, the Ely Field Office would continue to employ best management practices in keeping with ongoing tamarisk control efforts (Medlyn 2004). Such practices include, among others, mechanical and bio-engineered streambank erosion controls; consideration of type, timing and extent of control treatments; alternative treatments for overall site stabilization and revegetation; and monitoring. Removal of tamarisk also will benefit the soil resource by reducing the amount of salt taken from the root zones and deposited on the surface with decaying foliage.

Soil environments frequently provide an exposure and migration route as well as a degradation mechanism for herbicides. Future land management may involve more widespread herbicide applications within the planning area. Thus, herbicide applications present a potential impact issue with respect to soils and secondarily, water and other resources. These potential impacts would be minimized by following U.S. Environmental Protection Agency labeling requirements, adhering to biological opinions where applicable, and implementing best management practices. Therefore, effects on soil resources from herbicide applications are expected to be minimal under the Proposed RMP.

Conclusion. Over the short term, the Proposed RMP would be expected to increase the risk of soil erosion and temporary loss of productivity on freshly treated areas. Implementation of best management practices, including restoration monitoring, would minimize these risks. Long-term reductions in erosion rates and increases in soil quality would be expected with successful widespread vegetation restoration and weed management. The Proposed RMP would achieve the stated goals for the soils program, including the Resource Advisory Council Standards.

Alternative A

Impacts from Soil Management Actions. Specific management directions for soil resources are identified in Section 2.5.4 for Alternative A. In addition, the resource goals and activities identified for soil resources (see Interactions with Other Programs) further guide management directions. When carried out, these management actions would conserve soil resources, minimize erosion and sedimentation, and maintain or improve long-term soil quality.

Impacts from Other Programs. Impacts to soils associated with noxious and invasive weed management would be the same as or similar to the Proposed RMP.

Vegetation. Effective and timely restoration of disturbed areas and achievement of proper functioning condition are both fundamental to soil conservation. The consequences of Alternative A for soils would be directly related to the effectiveness of the vegetation program in meeting its stated goals.

Vegetation restoration activities that remove existing vegetation and involve ground disturbances would result in short-term loss or damage to soil resources. Impacts to soils would vary with soil type and extent of disturbance. Impacts to soil resources that result from restoration activities are dependent upon the methods used to manipulate vegetation. Short term effects from initial disturbances would be mitigated through standard operating procedures and best management practices.

Long-term soil erosion losses are expected under Alternative A as a result of the general trend toward increasing woody species distribution and density in the planning area. Long-term impacts would result from increasing tree densities that preclude herbaceous ground cover, which often leads to accelerated erosion. Restoration activities also would include determination of causative factors contributing to soil losses and their remediation. At best under Alternative A, the beneficial results would manifest at a low annual rate due to the low level of restoration. A more likely result is further loss of perennial herbaceous understory and near-surface root biomass on widespread areas of overmature pinyon/juniper woodlands and sagebrush stands. These effects would be likely to accelerate soil erosion.

Wild Horses. Under Alternative A, wild horse management would continue in the existing 24 herd management areas, including areas where forage resources are marginal or inadequate to sustain existing herds. Scarcity of forage in these areas contributes to resource damage and accelerated erosion by these herds. Wild horse gathers would be sporadic in nature, often not occurring with regularity to protect necessary vegetation characteristics needed to conserve soil resources. This would impact soils by increased erosion and loss of soil quality.

Lands and Realty. Impacts generally would be similar to those described for the Proposed RMP.

Renewable Energy. Soil impacts associated with renewable energy management activities would be the same as described for the Proposed RMP.

Travel Management and Off-highway Vehicle Use. Roads are generally the greatest contributor to erosion. Roads serve to drain large amounts of water from the road surface, channel it during peak flow, and scour downstream areas causing erosion and sedimentation. The severity of this impact is largely a function of traffic volumes, road design, surfacing, geology, vegetation, and topography. Under Alternative A, there are few restrictions on off-road travel (9.8 million acres classified as open). Off-road travel commonly starts as a “two track” that invites further use and eventually leads to a proliferation of roads. This proliferation causes local compaction and increased erosion. Although it may presently occur on a localized basis, increased management activity and human visitation over time could result in more widespread impacts over the long term.

Recreation. Only one special recreation management area (750,000 acres) and no special recreation permit areas are included in Alternative A. Most recreation activities would continue to be dispersed with fewer concentrated impacts on soils.

Livestock Grazing. Under Alternative A, current trends in grazing-related impacts to soil resources would continue and would be similar to those described for the Proposed RMP. Based on allotment evaluations completed since 1990 on the planning area, livestock grazing may be impacting soils in selected areas, particularly winterfat bottoms, riparian areas, aspen stands, and areas where livestock concentrate.

Forest/Woodland and Other Plant Products. Off-road activities would occur in relatively small, localized areas as people drive vehicles as close as possible to the products they harvest. This can result in ground disturbances and local compaction where vehicles are used. The fuelwood program includes permit stipulations that generally would limit impacts to existing roads and trails.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development. Impacts on these areas would be the same as those described for the Proposed RMP.

Watershed Management. Impacts to soil resources would be the same as in the Proposed RMP except for impacts associated with allocation of additional forage to livestock, wild horses, and wildlife. There would be impacts to soil from increased compaction and reduced soil cover caused by this allocation.

Fire Management. Under Alternative A, prescribed fire and wildland fire use (approximately 3.6 million acres available) would not be used as extensively as in the Proposed RMP. As a result, short-term increases in soil erosion rates would be expected, along with short-term increases in nutrient status. In locations where intense fires occur, short-term water repellency of soil surfaces may result. The development and implementation of emergency stabilization and rehabilitation projects would reduce these impacts. Long-term soil quality would improve with greater moisture infiltration as herbaceous cover is restored. However, this would occur on less acreage than the under the Proposed RMP. In the long term, less acreage would have the vegetation resilience restored and more intense wildland fires would occur. This would result in more fire-related impacts to affected soils than under the Proposed RMP. Short-term soil disturbance would occur during fire suppression activities (e.g., fireline construction) from the use of hand tools and machinery. These impacts would be reduced through the development and implementation of emergency stabilization and rehabilitation projects.

Conclusion. Current soils impacts and accelerated erosion losses primarily result from changing ecological conditions within the planning area. Such factors include reduction in perennial herbaceous understory and widely scattered minor surface disturbances such as those resulting from concentrations of grazing animals, off-highway vehicle use, and various other human activities. Under Alternative A, the effects of accelerated erosion on soil resources would continue their current trends, and this alternative would fail to achieve the goals for the soils program, including the Resource Advisory Council Standards.

Alternative B

Impacts from Soil Management Actions. Specific management directions for soil resources are identified in Section 2.6.4 for Alternative B. In addition, the resource goals and activities identified for soil resources (see Interactions with Other Programs) further guide management. When carried out, these management actions would conserve soil resources, minimize erosion and sedimentation, and maintain or improve long-term soil quality.

Impacts from Other Programs. Soil impacts associated with vegetation, wild horses, lands and realty, renewable energy, travel and off-highway vehicle use, forest/woodland and other plant products, geology and mineral extraction, watershed management, and fire management would be the same as or similar to those described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Recreation. The potential effects on soil resources from recreation would be similar to those described under the Proposed RMP, since overall land planning would involve constraints on recreation. Potential impacts associated with special recreation management areas would involve approximately twice the acreage (2.7 million acres) involved under the Proposed RMP. Constraints on off-road travel and areas for race events would decrease overall impacts to soils from compaction and erosion.

Livestock Grazing. Under Alternative B, livestock grazing would be constrained to a greater degree than under the Proposed RMP, further reducing the level of impacts to soils. Approximately 3.0 million acres in desert bighorn and Rocky Mountain bighorn sheep ranges and 542,100 acres of desert tortoise habitat would be unavailable for livestock grazing.

Noxious and Invasive Weed Management. Alternative B would increase the rate of weed treatments and herbicide applications, including those used to control tamarisk. As a result, there would be increases in short-term soil erosion and sedimentation. These effects would be minimized by the application of best management practices. Over the long term, soil erosion would be reduced by improvements in perennial plant cover and greater density and extent of near-surface root biomass. The trend of increasing soil salinity in areas invaded by tamarisk would be reduced, and soil salinity in such areas would gradually begin to be mitigated by leaching.

Conclusion. Under Alternative B, the scale of vegetation treatment would increase the short-term risk for accelerated erosion in the event of extensive soil disturbance or delays in restoration success. However, the implementation of best management practices, including restoration monitoring, would minimize this impact. On a long-term basis, the erosion potential of restored areas would be diminished, soil quality would be enhanced, and activities contributing to accelerated erosion and sedimentation would be reduced over much of the planning area. Restoration of vegetation resilience and return to historical fire regimes would result in reduced impacts to soils when fires occur. Alternative B would achieve the goals for the soils program, including the Resource Advisory Council Standards.

Alternative C

Impacts from Soil Management Actions. Specific management directions for soil resources are identified in Section 2.7.4 for Alternative C. In addition, the resource goals and activities identified for Soil Resources (see Interactions with Other Programs) further guide management. When carried out, these management actions would conserve soil resources, minimize erosion and sedimentation, and maintain or improve long-term soil quality.

Impacts from Other Programs. Soil impacts associated with vegetation, wild horses, lands and realty, renewable energy, travel and off-highway vehicle use, livestock grazing, geology and mineral extraction, watershed management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Recreation. The potential effects on soil resources from recreation would be similar to those described under the Proposed RMP, since overall land planning would involve constraints on recreational use of off-highway vehicles. Potential impacts associated with special recreation management areas would involve about twice the acreage (2.6 million acres) involved under the Proposed RMP. Constraints on off-road travel and backcountry use would decrease overall impacts to soils from compaction and erosion.

Forest/Woodland and Other Plant Products. The impacts associated with implementing Alternative C would result in management for more forest/woodland products. Soil disturbances caused by harvesting products would increase in size and intensity in forest/woodland areas. Traffic could increase in forest/woodland areas due to the increased availability of desirable products, thereby creating soils impacts. These would be most likely to occur near communities. Permit stipulations would help minimize such impacts by requiring traffic to stay on existing roads and trails.

Fire Management. Under Alternative C, all wildland fires would be suppressed. Over the short term, resulting impacts on soil quality would be relatively limited. Over the long term, however, the risk of widespread, uncontrolled, and possibly high-intensity wildland fires would dramatically increase. After such events occurred, soil nutrient status would increase and accelerated soil erosion would dramatically increase, with a net reduction in soil quality.

Conclusion. Alternative C would involve substantial increases in terms of vegetation treatment. Thus, it would involve short-term erosion risk, but long-term improvement to soil stability and quality. Short-term impacts from management of vegetation and other resources would be minimized by best management practices. Long-term reductions in accelerated erosion may be limited by the emphasis on commodity production. Alternative C would likely achieve the goals for the soils program over major portions of the planning area but may not sustain that achievement in the event of a major wildland fire. Thus, Resource Advisory Council Standards may not be met.

Alternative D

Impacts from Soil Management Actions. Specific management directions for soil resources are identified in Section 2.8.4 for Alternative D. In addition, the resource goals and activities identified for soil resources (see Interactions with Other Programs) further guide management. When carried out, these management actions would conserve soil resources, minimize erosion and sedimentation, and maintain or improve long-term soil quality.

Impacts from Other Programs.

Vegetation. Under Alternative D, vegetation would be managed primarily to treat invasive annuals or undesirable exotic species. In the pinyon/juniper woodlands, emphasis would be placed on allowing natural processes to continue on the majority of the acreage, with treatment to limit annual weed occurrence on selected acreage. Protection or management to maintain natural function and prevent expansion of annual weeds would be priorities on salt desert shrub and sagebrush communities. Under Alternative D, overall vegetation treatments would be conducted on less acreage than under Alternative A. In the majority of areas where natural processes are allowed to continue, current trends of erosion and sedimentation and ongoing losses of soil quality are likely to continue although at somewhat reduced rates due to the absence of livestock grazing and other discretionary uses. In many areas erosion, sedimentation, and loss of soil quality could continue at current rates, could diminish with livestock removal, or could increase with greater large-scale fire occurrence. Overall, beneficial effects on soil quality would not be as extensive as under Alternatives B or C.

Wild Horses. Potential effects on soil resources under Alternative D would increase beyond those of other alternatives, primarily as a result of the large number of herd management areas and the absence of population management in wild horse herds within this alternative. Because horse populations would be allowed to increase without constraints in herd management areas under Alternative D, additional impacts to soil resources would be expected to occur.

Lands and Realty. Minimal soil impacts would be associated with the exclusion of lands and realty actions.

Renewable Energy. Minimal soil impacts would be associated with the exclusion of renewable energy development activities.

Travel and Off-highway Vehicle Use. Impacts to soil resources would diminish as a result of less travel and off-highway vehicle use (11.1 million acres classified as closed) and the exclusion of all permitted, discretionary uses.

Recreation. Soil-related impacts from recreation uses would decrease under Alternative D, due to the elimination of special recreation management areas and special recreation permit areas.

Livestock Grazing. Soil-related impacts from livestock uses would decrease under Alternative D, due to the exclusion of such activities.

Forest/Woodland and Other Plant Products. Soil-related impacts from harvesting forest/woodland and other plant products would decrease under Alternative D, due to the exclusion of most activities within this program.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Watershed Management. Allocation of additional forage provided to wildlife, wild horses, and watershed maintenance would help mitigate other types of impacts (e.g., fire) to soil resources in this alternative.

Fire Management. Alternative D would allow most wildland fires to burn with minimal fire suppression except for human-caused fires and those that threaten life or property. This would allow wildland fire to occur in areas that may not have the resiliency to benefit from a fire. In the long-term, this would result in damage to the soils through increased erosion rates. In the short and long term, depleted soil resources and the lack of emergency fire stabilization and rehabilitation could result in establishment of invasive species that would further impact the soil resource. Cheatgrass would likely proliferate under this alternative.

Noxious and Invasive Weed Management. Effect on soil resources under Alternative D would be similar in nature, but more extensive, than those described for the Proposed RMP.

Conclusion. Alternative D would involve some increases in rates of vegetation treatment, but with a limited approach and treatment scale. It also would involve limited fire suppression. Thus, Alternative D would create long-term erosion risk, limit long-term benefits to soil quality from vegetation treatments, and enhance erosion risk from major fire events. Erosion-generating human activities such as off-highway vehicle use would be substantially reduced over much of the planning area, but benefits from limiting these more concentrated activities would likely be offset by more widespread increases in accelerated erosion from major wildland fires. Overall, this alternative is not expected to achieve the program goals in a sustained manner over the long term, including the Resource Advisory Council Standards.

4.5 Vegetation Resources

Impact Issues

Vegetation is a cornerstone of watershed health that is inventoried and correlated with edaphic (soils) characteristics in order to classify ecologically meaningful units for watershed management. With respect to the planning decisions within this document, a desired range of conditions has been established for each major vegetation type that incorporates restoration of degraded ecological systems and management of currently healthy ecological systems that are in jeopardy of becoming degraded. A non-functioning watershed, where desired range of vegetation conditions are not being met, may cause a decrease in water yield of 25 to 40 millimeter for each 10 percent increase in tree cover (Jackson et al. 2000). These ecological systems are characterized by highly complex inter-relationships between physical (e.g., air, soil, and water) and biological (e.g., vegetation, wildlife, and fish) dimensions. Within all alternatives, vegetation would be managed in accordance with state and transition models and LANDFIRE Biophysical Setting models to attain the desired vegetation states and phases for each vegetation community (see Appendix C).

Assumptions for Analysis

- The recent patterns of climatic characteristics, including annual variability and directional change (trend toward warmer and drier conditions), would continue over the next several decades.

- Currently available treatment tools and methodologies would continue to be the primary mechanisms for achieving the desired vegetation states (see Appendix G).

- Management recommendations from Natural Resources Conservation Service ecological site descriptions, state and transition ecological models, and LANDFIRE Biophysical Setting models will be used.

- Sufficient commercial seed sources of the desired species would not always be available to meet the needs of the restoration program. It is recognized that seed of several desired species may not be available every year and that contingency plans for alternate species may need to be factored into individual watershed treatment plans. (The Ely Field Office would work with appropriate vendors to ensure that they are aware of the expected market demands.)

- Response to treatment is expected to vary with soil type, availability of natural and artificial seed sources (for both desirable and invasive species), and damage to seedlings by grazing or other disturbances. Thus, drought conditions or unplanned grazing damage before seedlings are well established could reduce success and create the need for repeated treatment on the same area. The following typical success rates for fire rehabilitation treatments by vegetation type are used by the Ely Field Office for planning purposes and are used herein for impact analysis:

– Shadscale	30 percent
– Winterfat	30 percent

- Black sagebrush	50 percent
- Wyoming sagebrush	50 percent
- Mountain sagebrush	70 percent
- Mountain mahogany	70 percent
- Pinyon-juniper woodland	70 percent

Interactions with Other Programs

The vegetation management program within the planning area potentially would be affected by actions within soils, fish and wildlife, special status species, wild horses, visual resources, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, woodlands and native plant products, geology and mineral extraction, watershed management, fire management, noxious and invasive weed management, and special designations components of the plan. The alternatives have the potential to affect vegetation in terms of the relative abundance of species within communities, the relative distribution of plant communities, and the relative occurrence of vegetation states of those communities. However, implementation of any alternative would not result in the complete elimination of a plant species or plant community. Management actions would not intentionally eliminate a special status plant species.

Goal

Manage vegetation resources to achieve or maintain resistant and resilient ecological conditions while providing for sustainable multiple uses and options for the future across the landscape.

Objective

To manage for resistant and resilient ecological conditions including healthy, productive, and diverse populations of native or desirable nonnative plant species appropriate to the site characteristics.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to vegetation also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. Mitigation measures were considered within the following impact analysis section in response to anticipated impacts. Additional “proposed mitigation” for vegetation is identified in Section 4.29, Proposed Mitigation and Potential Effectiveness. In order to be carried forward as part of the Approved RMP, these “proposed mitigation measures” would have to be incorporated into the final decision documented in the Record of Decision. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis.

These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Vegetation Management Actions.

Parameter – General Vegetation Management

Under the Proposed RMP, the ecological conditions for all major vegetation types would improve through vegetation manipulation and resource management systems. Many vegetation communities would progress toward a reduced dominance by woody species and increased mosaic of multiple-aged shrubs, forbs, and perennial grasses. There is general agreement that true restoration requires not only reestablishment of more desirable structure or composition, but of the processes needed to sustain them for the long term (McIver and Starr 2001). Long-term vigor and health of the vegetation communities, which include maintenance of soil stability and cycling of energy, nutrients, and water, would be managed across the landscape. The desired range of conditions as expressed in the various vegetation states would increase the ability of the community to be resistant and resilient to change and reduce the risk of catastrophic wild fires. **Table 4.5-1** shows the relative percentages of each vegetation community that would be treated to attain the desired range of conditions. The vegetation manipulation units would be designed and evaluated on a case-by case basis as the Ely Field Office completes each watershed analysis.

Table 4.5-1

Percentages of Vegetation Communities to be Treated or Maintained to Attain Desired Range of Conditions (Proposed RMP)

Vegetation Community	Total Area (acres)	Percent Treated	Percent Maintained
Pinyon-juniper woodland	3,593,400	77	23
Aspen woodland	7,000	59	41
High elevation conifer[1]	47,000	47	53
Salt desert shrub	1,221,000	18	82
Sagebrush	5,619,500	70	30
Mountain mahogany	46,000	35	65
Mojave Desert – creosotebush/bursage	365,500	15	85
Mojave Desert – blackbrush	382,500	10	90
Riparian/wetlands	3,100	0	100
Non-native seedings	269,500	30	70

[1] Not including approximately 9,000 acres of ponderosa pine managed separately.

Management would be designed to maintain or establish diversity, mosaics, and connectivity of vegetation communities at the watershed and project level scale. The overall goal of the Proposed RMP would be to emphasize plant and animal community health at landscape levels. To achieve the desired range of conditions, management would include a variety of methods to increase or decrease the vegetation overstory and remove invasive species. Where existing conditions are within the desired range of conditions, vegetation would be managed in a manner to maintain that status.

Application of treatments to the acreages discussed under the Proposed RMP would result in impacts to vegetation communities, both in the short term (where some temporary effects such as increased temporary risk of weed invasion may hamper restoration) and in the long term (where the treatments are expected to result in increased resiliency and improved ecological health). The short-term impacts associated with restoration efforts would include temporary reduction in vegetation cover and productivity, which could impact other resource programs. Moving these communities to an earlier vegetation phase, however, would provide long-term benefits to other resources and users. Implementation of the best management practices would reduce or eliminate some of the impacts to vegetation communities. For example, the highest return on efforts is anticipated by treating areas that have not crossed a threshold and where the desired plant community is still present but approaching a threshold (see Appendix C).

Within the Great Basin ecological system, the greatest threats to the sagebrush communities are the spread of cheatgrass and pinyon/juniper expansion into sagebrush (Rowland and Wisdom 2005) (see **Maps 4.5-1** and **4.5-2**). Where invasive species, primarily cheatgrass, dominate the understory, the invasive species would be removed to the extent practicable and replaced with perennial herbaceous species. Effective suppression of cheatgrass is normally impractical with any single treatment approach, including herbicides. Thus, a combination of treatments and tools over a period of several years would be necessary. Along with providing the intended effect of suppressing various invasive species, these treatments may have inadvertent somewhat unfavorable effects on selected desirable species within the plant community.

Management within the Mojave Desert and salt desert shrub vegetation types would focus on restoration of healthy ecological systems primarily through application of herbicides on sites infested with annual invasive species and through changes in grazing management to maximize opportunities for natural recovery and minimize the risk of introduction and spread of invasive species. The rate and type of vegetation response in these areas would be expected to vary according to the current ecological state. Without treatment, areas with perennial native grasses and forbs present would have greater recovery potential from disturbance than those that are dominated by annual brome grasses and other invasive species. Prescribed fire would be used minimally in these vegetation types; however, all available tools, techniques, or combinations thereof would be used where appropriate. To the extent possible, tools would be selected to control or reduce invasive species while minimizing impacts to the desired native perennial vegetation.

Impacts to vegetation in untreated areas outside the desired range of conditions would remain similar to those of current management with potential continued decline of ecological health and accumulation of woody fuels that may later contribute to wildland fire problems. Such untreated areas, however, would diminish at a more rapid rate than under current management and the Proposed RMP offers greater flexibility for applying treatment to such areas before they constitute major fire hazards.

Revegetation success typically is higher in the more mesic, higher elevation vegetation types (e.g., pinyon-juniper, mountain mahogany, and mountain sagebrush). These are some of the types that tend to have a higher relative abundance in the typical small watershed described in Chapter 3.0. On the other hand, the typical larger watersheds tend to include a higher proportion of low elevation vegetation types such as shadscale and Wyoming sagebrush where soils are drier and revegetation success is less probable. In these vegetation types with the lowest probabilities for successful revegetation (e.g., shadscale and winterfat), treatment techniques such as changes in livestock grazing, mechanical mowing, herbicide application, or biological control may be the preferred tools. Other tools may be used as determined by site-specific analyses.

Parameter – Pinyon-Juniper Woodlands
In terms of potentially treated acreage, the pinyon-juniper woodland vegetation type is one of the two most heavily affected communities through vegetation treatments with some 77 percent or over 2.7 million acres of the community estimated to need treatment (see **Map 4.5-3**). Treatments in the pinyon-juniper woodland type are expected to include all tools, techniques, or combinations thereof and to result in substantial changes in community composition and age classes for dominant species. Both of these changes will noticeably affect the character of the treated vegetation community while improving vegetation resilience.

Parameter – Aspen
Actions implemented to maintain or improve woodland and forest health, develop and maintain old growth characteristics within forest stands, stimulate new growth within quaking aspen communities, or reduce the dominance of pinyon and juniper would have positive benefit to understory vegetation communities by releasing resources for development of vigorous and diverse multilayered vegetation structure. Treatments in the aspen community would focus on decreasing invasive tree species while increasing age variation of aspen to the greatest extent possible. Treatments would include all tools, techniques, or combinations thereof. Thus, treatments would be expected to dramatically change the character of the treated sites over the long term.

Parameter – High Elevation Conifer Species
Actions implemented to maintain or improve forest health, develop and maintain old growth characteristics within forest stands, stimulate new growth within high elevation conifer communities, or reduce the stand density in overmature phases would have positive benefit to understory vegetation communities by releasing resources for development of vigorous and diverse multilayered vegetation structure. Treatments in the high elevation conifer forest type would focus on all available tools, techniques, or combinations thereof to prevent stands crossed threshold into undesired phases or before invasive species become established. Such treatments are not expected to dramatically change the character of the treated sites (e.g., herbicide application to invasive species and selective tree thinning) or would be restricted to small areas of larger stands (prescribed fire and commercial tree harvest).

Parameter – Salt Desert Shrub
Major emphasis for restoration of the salt desert shrub type would be the control of the spread of invasive and noxious weeds. This emphasis would involve all tools, techniques, or combinations thereof. Although this type is extensive within the planning area, only a small percentage of the area (18 percent) is designated for treatment. The treatment approaches involved may affect the overall salt desert shrub communities.

Parameter – Sagebrush (basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, and black sagebrush)
Sagebrush communities represent the largest overall vegetation type within the planning area and, with approximately 70 percent of the type estimated to need treatment. It also represents the largest component of the planning area at over 5.6 million acres. All tools, techniques, or combinations thereof may be applied to achieve desired vegetation conditions. As new tools and techniques become available, they also could be used. Treatment within this type would change the character of the treated areas from shrub-dominated to herbaceous-dominated communities.

Parameter – Mountain Mahogany
Actions implemented to maintain or improve mountain mahogany sites, stimulate new growth, or reduce the stand density in overmature phases would have positive benefit to understory vegetation communities by releasing resources for development of vigorous and diverse multilayered vegetation structure. Treatments in mountain mahogany communities could involve all available tools, techniques, or combinations thereof before stands crossed threshold into undesired phases or before invasive species become established. Such treatments are not expected to dramatically change the character of the treated sites (e.g., herbicide application to invasive species and selective woodcutting) or would be restricted to small areas of larger stands (e.g., prescribed fire). This vegetation type covering approximately 46,000 acres represents less than 0.5 percent of the planning area, and only 35 percent of the type (16,100 acres) would be subject to potential treatment.

Parameter – Mojave Desert Vegetation (creosotebush/bursage and blackbrush)
Major emphasis for restoration of the Mojave Desert vegetation type would be the control of the spread of invasive and noxious weeds. This emphasis would involve use of all available tools, techniques, or combinations thereof. Selection of appropriate tools for a specific management situation would be critical with this ecological system. Unintended consequences, if any, of management actions would be long lasting and impacts to vegetation would be long term.

The large acreage of Mojave Desert vegetation burned in the South Desert Complex Fires of 2005 demonstrated that different vegetation types within the Mojave Desert have differential natural recovery potentials following fire. Some vegetation types, such as scrub-oak, thrive with fire and recover relatively quickly through re-sprouting. Other types, such as blackbrush-dominated communities, are not fire resilient, and are expected to convert to invasive annual grasslands in the absence of intervention and rehabilitation efforts. The creosote bush-white bursage type is intermediate in nature with the dominant species having moderate potential for re-sprouting after fire.

Parameter – Riparian/Wetlands
Treatment effects related to wetlands and riparian areas would be more substantial under the Proposed RMP than current management with wetland management and restoration being thoroughly integrated into the watershed analysis and restoration program. Management actions would focus on achievement of specific desired range of conditions, including related wildlife usage, rather than on just achievement of proper functioning condition. All available tools, techniques, or combinations thereof would be used in

selected areas. These treatments may have short-term impacts in terms of surface disturbance, but would be expected to result in long-term benefits to these areas.

Parameter – Nonnative Seedings
All available tools, techniques, or combinations thereof would be used in the reduction of less desirable shrub species (e.g., rabbitbrush) and enhancement of perennial herbaceous cover. Impacts from such treatments would be expected to be short-term with rapid recovery of the herbaceous state on these sites.

Impacts from Other Programs.

Soil Resources. Management actions related to topsoil protection and reclamation procedures for disturbed surfaces would help ensure effective revegetation on disturbed areas and restoration of native species within these areas, thus minimizing impacts of such disturbances to local vegetation communities.

Fish and Wildlife. The Proposed RMP would include the designation of specific wildlife habitat needs such as vegetation species, percent cover, timing of treatment activities, and maintenance of vegetation corridors for movement as described in desired range of conditions for vegetation in Chapter 2. Together with livestock and wild horses, wildlife presence can affect the success of restoration efforts, particularly if the restoration effort involves a small area. Damage also may reach problem levels for certain types of vegetation restoration and wildlife (e.g., big game herbivory on aspen restoration areas).

Special Status Species. The direct impacts of special status species management on vegetation and the vegetation treatment program would be the constraints imposed by local policies on the restoration of habitats for greater sage-grouse and other sagebrush obligate species. The Proposed RMP would include the designation of specific wildlife habitat needs such as vegetation species, percent cover, timing of treatment activities, and maintenance of vegetation corridors for movement. This emphasis, in the short term, may impact prioritization of vegetation treatments.

Wild Horses. The elimination of marginal quality herd management areas encompassing 1.6 million acres would reduce potential wild horse impacts to treated areas in the former herd management areas. Periodic evaluation of wild horse impacts to resource values and adjustments of wild horse populations would limit long-term impacts on vegetation and soil resources. Treatments also may be timed to coincide with the normal cycle of periodic gathers to take advantage of low points in the population cycle for a given herd management area. Fencing of individual vegetation treatment areas also may be conducted, where necessary.

Visual Resources. Visual Resource Management Classes I and II (about 3.5 million acres) may constrain types and extents of vegetation treatments implemented in various portions of the decision area. With substantially more acres in Class II and more planned treatments under the Proposed RMP than under current management, this modification is expected to become more of a factor in treatment planning.

Lands and Realty. Additional possible land disposal designations proposed under the Proposed RMP would total approximately 75,600 acres, of which approximately 60 percent would be shrubland. Land disposals could affect vegetation treatments and management on surrounding public lands through increased probability for introduction of weeds from disturbance areas associated with development activities, constraints on use of certain vegetation treatments (e.g., fire) in adjoining lands, and changes in priority of areas to be treated. Potential land disposals would not affect vegetation treatments and vegetation management on the remainder of the planning area. Rights-of-way and special uses on the planning area, including communication sites and utility corridors, affect vegetation to the extent that ground disturbances are involved. Consolidation of major rights-of-way into corridors would limit the amount of surface disturbance and disturbance to vegetation communities. All permits, leases, and contracts are administered with conservation measures such as topsoil salvage and reclamation of all vegetation disturbed or removed. Thus, most impacts associated with these activities are short term and would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Renewable Energy. The Proposed RMP would allow wind energy, biomass energy, and solar energy development. The reasonably foreseeable development for renewable energy within the planning area involves a total area of approximately 40,000 acres. Development of such facilities may constrain vegetation treatment decisions in the vicinity or may impose other priorities regarding potential treatments. Constraints of renewable energy development on planned vegetation treatments would be localized and of little consequence in relation to the overall vegetation restoration efforts. In terms of direct impact to vegetation from such activities, the extent of actual soil and vegetation disturbance associated with installation and maintenance of wind energy facilities is relatively small (4,000 acres), even though the overall facilities may extend over a large area (40,000 acres). These direct impacts would be related primarily to tower construction sites, access roads, and utility rights-of-way. Introduction of noxious or invasive species on these disturbed areas also is a potential impact to vegetation. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS. The reasonably foreseeable development scenario for renewable energy (see Section 4.13) has not assumed surface disturbance specific to biomass and solar energy development; however, vegetation treatment could provide feedstock for a biomass project.

Travel Management and Off-highway Vehicle Use. The restriction of off-highway vehicle use on 10.3 million acres to designated roads and trails as determined through a subsequent public process and area-specific analysis would substantially reduce the potential for continued wide-spread degradation of vegetation and soils on a watershed basis due to unrestricted vehicle travel. This restriction of off-highway travel would contribute positively to the achievement of vegetation restoration goals.

Recreation. Areas designated as special recreation management areas (approximately 1.2 million acres) and special recreation permit areas (approximately 1.3 million acres) under the Proposed RMP involve a variety of vegetation types throughout the decision area. These designations are not expected to interfere with vegetation treatment and management, but would be expected to potentially affect the types of treatments involved and the priorities for implementing such actions. Recreational usage of these areas would be one of the factors considered in the planning of vegetation treatments within the designated areas. These effects would be inconsequential in relation to the overall vegetation restoration efforts.

Livestock Grazing. Livestock grazing would continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These would continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing would be maintained for 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use would be made as needed to meet or progress toward achievement of the standards. These actions would lessen the impacts to the resource. A total area of approximately 203,670 acres would be unavailable for grazing in conjunction with the designation of ACECs.

Under proper grazing management, timing, intensity, duration, and frequency can successfully manage vegetation to maintain desired vegetation states. Livestock also can be used to change a vegetation state as long as it has not passed a threshold state. Impacts of various intensities, season, and duration of grazing use would be minimized as site-specific management consistent with meeting objectives is implemented. Grazing can stimulate growth in some plants, aid in the control of some invasive weeds, and sometimes be used to change community composition, structure, and function. Vegetation treatments would improve rangeland health and soil stability where undesirable annual and shrub/annual vegetation communities dominate. Nutrient cycling consistent with standards for land health would be maintained, although adjacent to water sources and other areas of heavy livestock use, nutrient concentration would occur. Fence construction to protect riparian concentration areas would increase localized impact to upland vegetation resources. Other rangeland projects could allow access to forage previously not utilized and increase impacts to vegetation resources. At times, following vegetation treatments, livestock may be excluded to allow for recovery of soil and vegetation resources. It is current agency policy that livestock be excluded on freshly seeded areas for the first two growing seasons or until objectives are met. When, and as necessary, livestock levels would continue to be adjusted in response to unusual conditions such as drought or fire to protect the vegetation resource.

Forest/Woodland and Other Plant Products. Implementation of the forest/woodland products program could result in continued off-highway activities in relatively small, localized areas as people drive vehicles as close as possible to the products they harvest. This can result in ground disturbances and local compaction where vehicles are used. The mostly open fuelwood cutting policy could indirectly assist with achieving healthy ecological conditions in certain small areas (e.g., woodland areas near roads and close to communities, where demand is greatest). However, the open policy reduces the efficiency and effectiveness of using harvest as a means of achieving vegetation objectives in more remote locations since more effort would be required to access them.

The collection of cactus and succulent plants would remain limited to salvage operations where habitat disturbances are planned. This aspect of the vegetation products program would remain at a low level of activity and have minimal impact to local flora.

Since manual seed collection would be encouraged under the Proposed RMP, the potential to impact vegetation resources from over-collection would be minimized. Local shrub seed collection would generally help ensure the availability of suitable adapted shrub seed supplies for planned treatment efforts.

Geology and Mineral Extraction. The majority of the planning area would remain open to mineral extraction. Based on the best available information, the reasonably foreseeable development scenario for the planning area anticipates surface disturbance of approximately 17,100 acres for mineral development and extraction. Therefore, anticipated impacts to vegetation resulting from mineral development would not likely exceed 17,100 non-contiguous acres. At least one large (greater than 3,000 acres) mine is foreseeable, which could have substantial impacts that would be evaluated on a site-specific basis. Most of the impacts would be temporary during the life of the operations with most areas of disturbance being reclaimed following closure of operations. Exploration drilling and mining activities involve ground disturbances that would require revegetation. Areas of soil compaction that result from mineral exploration, development, and production with heavy machinery can inhibit plant vigor and hamper reclamation. Potential impacts associated with mineral development would be minimized or eliminated through application of the best management practices presented in Appendix F, Section 1.

Watershed Management. Watershed analyses would occur on 41 high priority watershed management units. In the short term, these 41 watershed units would exhibit reduction of woody cover while the herbaceous understory would increase. Long-term impacts would be the attainment of the desired range of conditions in vegetation communities and improvement of watershed function for high priority watershed management units. The allocation of additional forage produced on treated areas would be in a balanced approach to watershed maintenance, wildlife, livestock, and wild horses. Low priority analyses would provide for achievement of desired vegetation conditions on those areas after the high priority areas are treated.

Fire Management. Prescribed fire and wildland fire use (approximately 8.9 million acres available) along with other techniques (manual, mechanical, and herbicide) would be used to the greatest extent practical as tools in implementation of vegetation treatments. In the short term, this would result in a disturbance of the vegetation communities resulting in impacts to vegetation cover and forage production. These impacts would be reduced through rehabilitation of the project sites if necessary. However, in the long term, the vegetation communities would be more resilient, occur in greater mosaics, and be returned to historical fire regimes and condition classes. This would reduce the impacts during future fire events. During fire suppression activities, vegetation would be impacted in the short term by removal during fireline construction involving the use of handtools or machinery. These short-term impacts could be reduced with the development and implementation of emergency stabilization and rehabilitation projects.

Noxious and Invasive Weed Management. Integrated weed management actions would slow the spread of established stands of noxious weeds and reduce the establishments of new infestations. Management to remove, reduce, and prevent noxious weeds includes the use of chemical, mechanical, biological, and cultural methods. Implementation of the best management practices would reduce or eliminate some of the impacts to vegetation by spread of noxious and invasive weeds. The effects of herbicide use vary with the selectivity of the herbicide used, the application rate, and the proximity of non-target plants to targeted ones. The use of biological agents (e.g., insects, sheep, and goats) to manage noxious weeds would affect native and desirable plants to the degree that non-target species are present in the treatment area and are palatable to animals. Based on implementation of best management practices, these short-term effects are not expected to interfere with the accomplishment of long-term restoration.

The treatment and subsequent removal of noxious weeds contribute to long-term restoration but can require short-term rehabilitation if substantial bare areas result. Herbicides with persistence in soils can adversely affect revegetation success for several years if young plants are vulnerable to the chemicals present. Where weed management fails to keep up with the establishment and spread of noxious and invasive species, they quickly contribute to the deterioration of rangeland health.

Special Designations. Under the Proposed RMP, 20 ACECs and several other special designations would be authorized. Designation of these areas could impact desired range of conditions for vegetation through constraints on vegetation treatments within or adjacent to each ACEC, depending on the type of resource being protected through the designation. Vegetation treatment in designated wilderness and wilderness study areas would have to be consistent with wilderness management objectives.

Conclusion. The Proposed RMP would generally reduce dominance by woody species and increase the diversity of vegetation communities over the long term, providing vegetation communities with structure, multiple-aged shrubs, forbs, and perennial grasses. This would result in greater productivity, improved wildlife habitat, and improved natural functions and watershed stability. Livestock grazing management could be used to maintain vegetation communities which currently meet the desired range of conditions and allow improvement of remaining vegetation communities to the desired range of conditions over the short and long term. It also would increase the return of plant litter to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities with maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained across the landscape through the use of numerous tools. This alternative would achieve the program goal.

Alternative A

Impacts from Vegetation Management Actions.

Parameter – General Vegetation Management

The desired range of conditions for vegetation communities and watershed improvement would continue to be implemented at rates somewhat above the historic rates of approximately 10,000 acres of watershed manipulation per year. The majority of treatment activity would continue to be seeding following wildland fires but all available tools, techniques, or combinations thereof may be used as appropriate. Watershed restoration treatments would continue to be diverse and varied, including mechanical and chemical vegetation treatments to reduce tree and shrub cover.

Potential treatment in Alternative A is approximately 2.9 million acres or about 25 percent of the total area occupied by those vegetation communities subject to treatment. **Table 4.5-2** shows the relative percentages of each vegetation community that would be treated to attain the desired range of conditions under Alternative A.

Table 4.5-2
Percentages of Vegetation Communities to be Treated or Maintained to Attain Desired Range of Conditions (Alternative A)

Vegetation Community	Total Area (acres)	Percent Treated	Percent Maintained
Pinyon-juniper woodland	3,593,400	32	68
Aspen woodland	7,000	20	80
High elevation conifer[1]	47,000	17	83
Salt desert shrub	1,221,000	18	82
Sagebrush	5,619,500	24	76
Mountain mahogany	46,000	15	85
Mojave Desert – creosotebush/bursage	365,500	15	85
Mojave Desert – blackbrush	382,500	10	90
Riparian/wetlands	3,100	0	100
Non-native seedings	269,500	17	83

[1] Not including approximately 9,000 acres of ponderosa pine managed separately.

Parameter – Pinyon-Juniper Woodlands

A much smaller portion of this type (approximately 1.1 million acres total) would be subjected to treatment under Alternative A than in the Proposed RMP, with emphasis placed on wildland urban interface areas. Total treatment impacts and ultimate treatment benefits would be correspondingly less than with the Proposed RMP. Long-term impacts of the treatment approach would likely be that the scale would be inadequate to achieve the program goals within this vegetation type.

Parameter – Aspen

Only a small portion (20 percent) of this type would be subject to treatment. Similar actions to the Proposed RMP to implement or maintain forest health, develop and maintain old growth characteristics within forest stands, stimulate new growth within quaking aspen communities, or reduce the dominance of pinyon and juniper would have positive benefit to understory vegetation communities by releasing resources for development of vigorous and diverse multilayered structure. Because these actions would occur at a reduced scale, impacts would be slight.

Parameter – High Elevation Conifer Species

Management of the high elevation conifer woodland/forest type in Alternative A could involve vegetation treatments on a small percentage of the area (17 percent). These treatments are not expected to dramatically change the character of the treated sites and are expected to result in only minimal impacts to these communities.

Parameter – Salt Desert Shrub

Management within the salt desert shrub vegetation type would be similar under Alternative A and the Proposed RMP, and resultant impacts would be similar. Management would focus on restoration of healthy ecological systems primarily through changes in grazing management to maximize opportunities for natural recovery. The rate and type of vegetation response in these areas would be expected to vary according to current ecological state. Without restoration treatment, areas with perennial native grasses and forbs present would have greater recovery potential from disturbance than those that are dominated by annual brome grasses and other invasive species.

Parameter – Sagebrush (basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, and black sagebrush)
This alternative would involve treatment of substantially less area (total of approximately 1.3 million acres) than under the Proposed RMP due to the differences in desired range of conditions. Impacts associated with specific treated areas would be similar to those under the Proposed RMP since the treatment tools and methods would be similar. Long-term impacts of the treatment approach would likely be that the scale would be inadequate to achieve the program goals within this vegetation type.

Parameter – Mountain Mahogany
Alternative A would involve minimal management and treatment of mountain mahogany with the primary treatment occurring as limited fuelwood cutting in dense stands of the species. Anticipated impacts would be minimal.

Parameter – Mojave Desert Vegetation
Management within the Mojave Desert vegetation type would be essentially the same as the Proposed RMP and impacts would be correspondingly similar. Management would focus on restoration of healthy ecological systems primarily through changes in grazing management to maximize opportunities for natural recovery. The rate and type of vegetation response in these areas would be expected to vary according to current ecological state. Without treatment, areas with perennial native grasses and forbs present would have greater recovery potential from disturbance than those that are dominated by annual brome grasses and other invasive species. Overall recovery rates expected for Mojave Desert vegetation communities that are currently in poor ecological health would be very slow and it may take several decades for such areas to achieve the desired range of conditions.

Parameter – Riparian/Wetlands
Riparian and wetland areas would continue to be inventoried and assessed for functional condition as described in Section 3.5. Site-specific measures (e.g., fencing or changes in herd management) would be used on a case-by-case basis to improve riparian conditions. Although localized measures sometimes are effective for improving riparian and wetland conditions, watershed conditions at large also affect hydrologic functioning and sustainability of the wetlands and these would continue to be addressed in a somewhat limited manner as vegetation treatments occur. Thus, impacts from treatment would be minimal, but effectiveness of the treatment also would be marginal.

Parameter – Nonnative Seedings
A smaller area would be treated than under the Proposed RMP with emphasis on fire rehabilitation. Both native and nonnative species would be employed in reclamation, although native species would be used whenever available. Seed mixes would be developed based on site-specific conditions, such as soils, precipitation, major ecological system, and elevation. The use of both native and nonnative species in reclamation activities (e.g., seeding) potentially can have ecological consequences for the long-term restoration of native plant communities. Nonnative species generally are undesirable if they tend to spread

and compete with native perennial species. Desirable nonnative plants typically are species adapted to similar environmental conditions that can be used to meet specific reclamation objectives. In comparison to the Proposed RMP, treatment effects in this vegetation type may be less in the short-term due to smaller areas involved, but greater in the long-term due to persistent stands of nonnative species.

Impacts from Other Programs. Impacts to vegetation are similar and closely related to impacts to soils, wildlife, wild horses, livestock grazing, and watersheds. Factors that affect any of these resources generally affect all of them. Impacts to vegetation associated with fish and wildlife, special status species, renewable energy, and noxious and invasive weed management would be the same as under the Proposed RMP.

Wild Horses. Impacts to vegetation resources would remain constant in the short term as appropriate management levels of wild horses are maintained. Impacts to vegetation associated with this program would be the same or similar to those described for livestock grazing. Because of their herd behavior and grazing habits, wild horses are more likely than big game species to damage freshly established seedings.

Visual Resources. Approximately 1.7 million acres in Visual Resource Management Classes I and II may constrain the types and extents of vegetation treatments implemented in various portions of the decision area. For example, it may not be possible to implement large blocks of mechanical treatment in such areas in a manner consistent with the class descriptions.

Lands and Realty. Under this alternative, lands identified for potential disposal total approximately 31,900 acres, primarily within northern portions of the planning area. These potential disposals and rights-of-way would have minimal effect on the vegetation treatment and management program. Applicants for major rights-of-way would be encouraged to use existing corridors to limit disturbance. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Travel Management and Off-highway Vehicle Use. Approximately 9.8 million acres of the planning area would be open to off-highway vehicle use. Off-highway travel commonly starts as “two tracks” that invite further use and eventually leads to a proliferation of unnecessary roads. Transportation management can influence vegetation restoration in a variety of ways that are discussed in other sections of this RMP/EIS. Transportation routes also are the primary mechanism for invasive plant species to arrive in an area, which then can affect the integrity of native plant communities. Although it may presently occur on a localized basis, increased human visitation over time could result in more widespread impacts to perennial vegetation.

Recreation. Impacts from recreation management actions generally would be similar to the Proposed RMP, primarily apparent at locations involving concentrated activities. A smaller area (approximately 750,000 acres) would be retained as special recreation management area. Where recreation is concentrated, such as campgrounds, trails, trailheads, off-highway vehicle routes, and motorcycle and truck race courses, localized vegetation impacts are predictable consequences.

Livestock Grazing. Impacts of livestock grazing under Alternative A would be similar to the Proposed RMP. Grazing would continue on the 120 acres proposed as unavailable within the additional ACECs under the Proposed RMP. The three existing desert tortoise ACECs totaling approximately 203,670 acres would remain unavailable for grazing.

Forest/Woodland and Other Plant Products. Fuelwood collection of dead pinyon and juniper is allowed throughout the planning area except in various restricted areas such as designated wilderness, wilderness study areas, and ACECs. Collection of live or greenwood pinyon and juniper is allowed in specific areas identified through individual forest management plans. This approach of designating specific areas for harvest of fuelwood and other products facilitates the use of harvest activities in meeting specific vegetation management objectives in the forest/woodland communities. Vehicle traffic off of existing roads and trails within designated cutting areas may contribute to impacts on understory species in these areas. Overall, the demand for pinyon and juniper trees and other products is low relative to the abundant supply within the planning area; therefore, the vegetation products program has minimal impacts to local flora, except in very localized harvest areas near communities.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be approximately the same as in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Watershed Management. Watershed management would be similar to the Proposed RMP except that treatment of high priority watersheds would occur at a reduced pace and additional forage produced on treated areas would be allocated to livestock, wild horses, and wildlife in the Schell Resource Area. Additional forage could be reserved for watershed maintenance, if appropriate, in other portions of the planning area.

Fire Management. Prescribed fire and wildland fire use (approximately 3.6 million acres available) and other techniques (manual, mechanical, and herbicide) would not be used extensively as tools in implementation of vegetation treatments. In the long term, this would result in less acreage of vegetation communities becoming more resilient, occurring in greater mosaics, and being returned to historical fire regimes and condition classes than under the Proposed RMP. This, in turn, would reduce the impacts during future fire events to vegetation communities on less acreage than the Proposed RMP. This would result in more intense wildland fires occurring in the long-term. In the short term, fire-related disturbances would result in impacts to vegetation cover and forage production. During fire suppression activities, vegetation also would be impacted in the short term by removal during fireline construction involving the use of handtools and machinery. These impacts would be reduced through development and implementation of emergency stabilization and rehabilitation projects.

Special Designations. No new ACECs would be designated under this alternative and the current vegetation management, including reseeding constraints, would continue on the three desert tortoise ACECs. Treatments in designated wilderness would be the same as described for the Proposed RMP.

Conclusion. Existing management would lead to a moderate reduction in shrub-dominated communities and a reduction in pinyon/juniper-dominated communities over the long term. Moderate shrub reintroduction into burned sites, as part of rehabilitation efforts, would maintain diversity in the long term at a broad scale. The historic rate of treatment (largely fire rehabilitation) each year to restore desirable perennial herbaceous species and restore ecological resiliency would be increased to the extent allowed under the current fire plan. This rate, however, is not considered adequate to match the current rate of ecological deterioration, increase in woody fuel, and expansion of weedy species throughout the planning area, and substantial long-term effects are anticipated. Thus, this alternative is not likely to achieve the program goal.

Alternative B

Impacts from Vegetation Management Actions.

Parameter – General Vegetation Management

The impacts to vegetation communities would be the same as described in the Proposed RMP. The total area currently estimated for potential treatment in Alternative B is approximately 7.1 million acres or about 62 percent of the total area occupied by those vegetation communities subject to treatment. **Table 4.5-3** shows the relative percentages of each vegetation community that would be treated to attain the desired range of conditions under Alternative B.

Table 4.5-3
Percentages of Vegetation Communities to be Treated or Maintained to Attain Desired Range of Conditions (Alternative B)

Vegetation Community	Total Area (acres)	Percent Treated	Percent Maintained
Pinyon-juniper woodland	3,593,400	77	23
Aspen woodland	7,000	59	41
High elevation conifer[1]	47,000	47	53
Salt desert shrub	1,221,000	18	82
Sagebrush	5,619,500	70	30
Mountain mahogany	46,000	35	65
Mojave Desert – creosotebush/bursage	365,500	15	85
Mojave Desert – blackbrush	382,500	10	90
Riparian/wetlands	3,100	0	100
Non-native seedings	269,500	30	70

[1] Not including approximately 9,000 acres of ponderosa pine managed separately.

Management within the Mojave Desert and salt desert shrub vegetation types would focus on restoration of healthy ecological systems primarily through application of herbicides on sites infested with annual invasive species and through changes in grazing management to maximize opportunities for natural recovery and minimize the risk of introduction and spread of invasive species. The rate and type of vegetation response in these areas would be expected to vary according to current ecological state. Without treatment, areas with perennial native grasses and forbs present would have greater recovery potential from disturbance than those that are dominated by annual brome grasses and other invasive species. Prescribed fire would be used minimally in these vegetation types; however, all available tools, techniques, or combinations thereof would be used where appropriate.

Where invasive species, primarily cheatgrass, dominate the understory, the invasive species would be removed to the extent practicable and replaced with perennial herbaceous species. Effective suppression of cheatgrass is normally impractical with any single treatment approach, including herbicides. Thus, a combination of treatments including appropriate herbicides as well as prescribed fire and specific grazing management practices over a period of several years may be necessary. If treatments were to occur without concurrent efforts to remove invasive species, further proliferation of cheatgrass in the freshly treated areas would have a high probability of occurrence.

Treatments acreage for Alternative B would result in substantial impacts to vegetation communities, both in the short term (where some temporary effects such as increased temporary risk of weed invasion may hamper restoration) and in the long term (where the treatments are expected to result in increased resiliency and improved ecological health). The highest return on effort is anticipated in treating areas that have not crossed a threshold and where the desired plant community is still present but approaching a threshold (see Appendix C). The short-term impacts associated with restoration efforts would include temporary reduction in vegetation cover and productivity, which could impact other resource programs. Moving these communities to an earlier vegetation phase, however, would provide long-term benefits to other resources and users. Where existing conditions are within the desired range of conditions, vegetation would be managed in a manner to maintain that status.

Impacts to vegetation in untreated areas outside the desired range of conditions would remain similar to those of Alternative A with potential continued decline of ecological health and accumulation of woody fuels that may later contribute to wildland fire problems. Such untreated areas, however, would diminish at a more rapid rate than in Alternative A and Alternative B offers greater flexibility for applying treatment to such areas before they constitute major fire hazards.

Parameter – Pinyon-Juniper Woodlands
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Parameter – Aspen
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Parameter – High Elevation Conifer Species
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Parameter – Salt Desert Shrub
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Parameter – Sagebrush (basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, and black sagebrush)
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Parameter – Mountain Mahogany
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Parameter – Mojave Desert Vegetation
Vegetation treatment methods and acreages would be the same as under the Proposed RMP except that livestock grazing would be eliminated on the remainder of the Mojave Desert. Thus, the impacts associated with this management approach would be slightly different. In some cases, the absence of grazing may contribute to accumulation of fine fuels and enhanced fire risk on certain areas. However, the absence of grazing may accelerate the recovery of various desirable perennial species following earlier disturbances including fire.

Parameter – Riparian/Wetlands
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Parameter – Nonnative Seedings
Vegetation treatment methods, acreages, and impacts would be the same as under the Proposed RMP.

Impacts from Other Programs. Vegetation effects associated with fish and wildlife, special status species, wild horses, visual resources, lands and realty, renewable energy, travel management and off-highway vehicle use, forest/woodland and other plant products, geology and mineral extraction, fire management, noxious and invasive weed management, and special designations would be similar to those described for the Proposed RMP. Impacts to vegetation would be similar and closely related to impacts to soils, wildlife, wild horses, livestock grazing, and watersheds. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Recreation. Impacts from recreation on vegetation under Alternative B would be similar to the Proposed RMP, except that the area involved in the nine special recreation management areas is greater, affecting an additional 2.7 million acres. This additional area would primarily lie within the pinyon-juniper and sagebrush vegetation types. This greater area designated for recreation would tend to disperse some of the usage and may reduce the concentration of impacts in localized areas.

Livestock Grazing. Livestock grazing would be discontinued on approximately 3.6 million additional acres in comparison to the Proposed RMP. Approximately 542,100 acres of desert tortoise habitat in the

Mojave Desert would be unavailable for grazing. The entire Mojave Desert area generally would be allowed to recover ecological health through natural processes rather than through restoration treatment measures. The removal of grazing over much of this area would help restore habitat for desert tortoise. The closure of over 3 million acres of current and historic bighorn sheep habitat would involve several vegetation types scattered throughout the planning area. Maintenance of the existing livestock grazing program throughout the watershed/vegetation treatment and restoration process may affect the design and scheduling of treatment areas to minimize impacts to individual permittees.

Watershed Management. The level of restoration activities would be increased to the limits of available funding/resources and focused on priority areas identified through the watershed analysis process. Additional forage resulting on areas successfully restored would not be allocated to livestock or wild horses and, thus, could help in further improvement of ecological health beyond meeting the standards for rangeland health.

Conclusion. Alternative B would generally reduce dominance by woody species and increase the diversity of vegetation communities over the long term, providing structure with multiple-aged shrubs, forbs, and perennial grasses. This would result in greater productivity and improved natural functions and watershed stability. Sustained or slightly reduced levels of livestock grazing would maintain vegetation communities which currently meet the desired range of conditions and allow improvement of remaining vegetation communities to the desired range of conditions over the short and long term. It also would increase the return of plant litter to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities, which includes maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained across the landscape, expect at small localized areas of soil disturbing activities. This alternative would achieve the program goal.

Alternative C

Impacts from Vegetation Management Actions.

Parameter – General Vegetation Management

Specific vegetation communities and conditions to be treated would be similar to the Proposed RMP, except for the differences in desired range of conditions identified in Section 2.7.5. This approach would require more frequent future treatments or increased management effort to maintain these more useful communities. The total area currently estimated for potential treatment in Alternative C is approximately 7.7 million acres or about 66 percent of the total area occupied by those vegetation communities subject to treatment. **Table 4.5-4** shows the relative percentages of each vegetation community that would be treated to attain the desired range of conditions under Alternative C.

Table 4.5-4
Percentages of Vegetation Communities to be Treated or Maintained to Attain Desired Range of Conditions (Alternative C)

Vegetation Community	Total Area (acres)	Percent Treated	Percent Maintained
Pinyon-juniper woodland	3,593,400	77	23
Aspen woodland	7,000	69	31
High elevation conifer[1]	47,000	79	21
Salt desert shrub	1,221,000	32	68
Sagebrush	5,619,500	75	25
Mountain mahogany	46,000	79	21
Mojave Desert – creosotebush/bursage	365,500	15	85
Mojave Desert – blackbrush	382,500	10	90
Riparian/wetlands	3,100	0	100
Non-native seedings	269,500	50	50

[1] Not including approximately 9,000 acres of ponderosa pine managed separately.

Slightly over 90 percent of this potential treatment area occurs in the pinyon-juniper and sagebrush vegetation types. The primary difference in restoration approach between Alternative C and the Proposed RMP is that Alternative C would focus on establishment and maintenance of vegetation communities in a narrower desired range of conditions conducive to the commodity (livestock, forest/woodland products, and big game) emphasis of this alternative. Achievement and maintenance of this desired range of conditions would require greater initial effort and more frequent future treatments.

Vegetation impacts resulting from implementing the vegetation treatments of Alternative C would be generally similar to those described for the Proposed RMP, especially in the short term. However, this alternative would involve only limited use of prescribed fire and would rely on more expensive mechanical and chemical approaches for most treatments. Thus, the area successfully treated within comparable budgets would probably be less in Alternative C, eventually leading to substantial differences between the two alternatives over the long term.

Parameter – Pinyon-Juniper Woodlands

Although the emphasis of treatment methods would be different between this alternative and the Proposed RMP (greater emphasis here on commercial harvest of forest/woodland products as a treatment tool), the overall areas to be treated and range to treatment methods would be similar. Therefore, impacts for Alternative C within this vegetation type are expected to be similar to the Proposed RMP.

Parameter – Aspen

The emphasis of treatment methods would be different between this alternative and the Proposed RMP (greater emphasis here on commercial harvest of forest/woodland products as a treatment tool), and the overall aspen area to be treated in Alternative C is slightly greater. The total aspen area to be treated, however, would be very small relative to the overall planning area. Therefore, impacts for Alternative C within this vegetation type are expected to be similar in nature and magnitude to the Proposed RMP.

Parameter – High Elevation Conifer Species
The emphasis of treatment methods would be different between this alternative and the Proposed RMP (greater emphasis here on commercial harvest of forest/woodland products as a treatment tool), and the relative portion of the high elevation conifer vegetation type to be treated in Alternative C is substantially greater. This substantial increase in percentage of type to be treated, however, represents a change in acreage from about 26,000 to 44,000, still less than 0.5 percent of the planning area. Therefore, impacts for Alternative C within this vegetation type are expected to be substantially greater in magnitude than the Proposed RMP, but still minor relative to the planning area.

Parameter – Salt Desert Shrub
Under Alternative C, a greater area of salt desert shrub would be subject to treatment than under the Proposed RMP. Management within the salt desert shrub vegetation type would focus on restoration of healthy ecological systems primarily through application of herbicides on sites infested with annual invasive species and through changes in grazing management to maximize opportunities for natural recovery. Prescribed fire would not be used in this vegetation types. Effects associated with this treatment would be similar in nature to those of the Proposed RMP, but would extend over a greater area. Impacts to the vegetation type from such treatments are expected to be small.

Parameter – Sagebrush (basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, and black sagebrush)
The total area of sagebrush communities subject to treatment under Alternative C would be only slightly greater (75 percent versus 70 percent of the type) than under the Proposed RMP, but the treatment methods would focus heavily on enhancement of forage production while maintaining and enhancing ecological health. Thus, in this alternative, greater areas would be seeded to increase herbaceous production. Impacts associated with this management approach would include greater areas of surface disturbance, increased risk of invasive species establishment, limited plant community structure and diversity is seeded areas, and reduced wildlife habitat values.

Parameter – Mountain Mahogany
Management of the mountain mahogany type under this alternative would focus on the establishment of the herbaceous state to provide forage for livestock and big game. The total area subject to treatment would be more than twice as large as under the Proposed RMP, however, this community represents less than 0.5 percent of the planning area so the total acreage involved (approximately 36,000 acres) is relatively small. Commercial woodcutting followed by seeding of disturbed areas would be a common treatment approach. Treatment impacts from disturbance, therefore, generally would be short-term in nature, but the impacts to the vegetation community and indirectly to other resources from conversion to the herbaceous state would tend to be long-term.

Parameter – Mojave Desert Vegetation
Vegetation treatment methods and acreages would be similar to those described for the Proposed RMP. Thus, the impacts associated with this management approach would be similar to the Proposed RMP. Management would focus on restoration of healthy ecological systems primarily through application of herbicides on sites infested with annual invasive species and through changes in grazing management to

maximize opportunities for natural recovery. Prescribed fire would be used in these vegetation types in limited situations.

Parameter – Riparian/Wetlands

Management of riparian/wetlands under Alternative C would be similar to that described for the Proposed RMP, except that maintenance of commodity production would be emphasized. Thus, treatments to enhance or restore plant community structure and composition would typically be implemented while maintaining multiple uses of the area or with minimal temporary protection from grazing impacts on seedings or plantings. Impacts associated with this management approach would be similar to the Proposed RMP, but site recovery/enhancement may be prolonged.

Parameter – Nonnative Seedings

Management of the nonnative seedings under this alternative would focus on the establishment or maintenance of the herbaceous state to provide forage for livestock and big game. Approximately 50 percent of the total area occupied by this type would be subject to treatment to reduce shrub density and seed perennial herbaceous species. Treatment impacts from new disturbance within the seeded areas would be greater than in the Proposed RMP, but total area occupied by the vegetation type would remain unchanged.

Impacts from Other Programs. Impacts associated with soils, fish and wildlife, special status species, wild horses, visual resources, renewable energy, geology and mineral extraction, noxious and invasive weed management, and special designations would be the same as or similar to those described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Lands and Realty. Areas identified for potential disposal under Alternative C are almost three times as extensive as the areas identified under the Proposed RMP. These possible land disposal areas are primarily shrubland. Effects on lands adjacent to the disposal areas likely would be minimal. Possible land disposals would not affect vegetation treatments and management on the remainder of the planning area. Applicants for communication sites and rights-of-way would be encouraged to use existing facilities and corridors to limit disturbance. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Travel Management and Off-highway Vehicle Use. Impacts to vegetation under this alternative would involve five off-highway vehicle use emphasis areas with substantially greater total acreage than in Alternative B. Impacts to vegetation on any individual area designated for this use still would be less than those described in Alternative A because off-highway vehicle use would be restricted to designated roads and trails.

Recreation. Impacts from recreation on vegetation under Alternative C would be similar to the Proposed RMP, except that the area involved in the nine special recreation management areas is greater, affecting an additional 2.6 million acres. This additional area would primarily lie within the pinyon-juniper and sagebrush vegetation types. This greater area designated for recreation would tend to disperse some of the usage and may reduce the concentration of impacts in localized areas.

Livestock Grazing. Impacts of livestock grazing to vegetation would be generally similar to the Proposed RMP, but the focus on commodity production would involve more intensive vegetation management and more frequent treatments than in the Proposed RMP.

Forest/Woodland and Other Plant Products. Under this alternative, commercial and personal collections of cactus could occur throughout the planning area without being limited to salvage operations, subject to constraints of Nevada state laws. This policy would invite increased levels of collection for a variety of purposes. The most accessible plant populations would become the most heavily collected, eventually removing an integral part of the local flora commensurate with the areas affected. This increased removal of cactus also could result in increased erosion and probability for invasive weed establishment.

Watershed Management. The allocation of additional forage available on restored areas after meeting the Standards for Rangeland Health to livestock could potentially reduce the availability of seed for natural plant propagation in relation to other alternatives where the excess forage may be allocated to wildlife and to enhance watershed maintenance (e.g., Alternative B).

Fire Management. Under this alternative, fire would be used in a limited context as a vegetation management tool, and wildland fires would be suppressed to the extent practical. Thus, planned vegetation treatments would involve primarily herbicide applications and mechanical approaches. Due to the greater expense of these methods in comparison to managed natural wildland fires, areas treated each year in Alternative C would likely be less than in the Proposed RMP and may not exceed the levels achieved under Alternative A. The fire suppression approach would lead to continued accumulation of heavy fuels in the untreated areas until these areas eventually burned in uncontrolled wildland fires. Such fires typically would be hot enough to kill any remaining perennial understory vegetation as well as the woody overstory species. Thus, impacts from fire management could be substantial over the long term.

Conclusion. Implementation of this alternative would reduce dominance of woody and exotic annuals species and increase dominance of herbaceous perennials in the long term. Greater productivity for allocation to consumptive uses would result. Limited shrub reintroduction into some burns would maintain diversity at a broad scale. However, the narrower range of desired conditions (with greater emphasis on the herbaceous state) in this alternative as compared to the Proposed RMP would require more effort and more frequent treatments to achieve and maintain. The higher probability for widespread fire over the long term also would necessitate greater efforts for fire suppression and rehabilitation as opposed to planned treatments. As a result of optimizing livestock use of available forage, the benefits of returning vegetation material to the soil would be minimized. Long-term vigor and health of vegetation communities would be maintained across the landscape, except at localized areas of concentrated activity. This alternative has a high potential for achieving the program goal over the short term, but the sustainability of resilient ecological conditions over the long term is questionable.

Alternative D

Impacts from Vegetation Management Actions.

Parameter – General Vegetation Management

To accomplish the desired range of conditions for this alternative as described in Section 2.8.5, the total area currently estimated for potential treatment in Alternative D is approximately 3,726,500 acres or about 32 percent of the total area occupied by those vegetation communities subject to treatment. **Table 4.5-5** shows the relative percentages of each vegetation community that would be treated to attain the desired range of conditions under Alternative D.

Table 4.5-5

Percentages of Vegetation Communities to be Treated or Maintained to Attain Desired Range of Conditions (Alternative D)

Vegetation Community	Total Area (acres)	Percent Treated	Percent Maintained
Pinyon-juniper woodland	3,593,400	52	48
Aspen woodland	7,000	35	65
High elevation conifer[1]	47,000	50	50
Salt desert shrub	1,221,000	18	82
Sagebrush	5,619,500	26	74
Mountain mahogany	46,000	55	45
Mojave Desert – creosotebush/bursage	365,500	15	85
Mojave Desert – blackbrush	382,500	10	90
Riparian/wetlands	3,100	0	100
Non-native seedings	269,500	11	89

[1] Not including approximately 9,000 acres of ponderosa pine managed separately.

Approximately 89 percent of this potential treatment area occurs within the pinyon-juniper and sagebrush vegetation types, primarily where the understories of these types are dominated by invasive annual species. Alternative D would emphasize minimum management and disturbance of vegetation communities with restoration of historic vegetation such that pinyon and juniper communities and sagebrush communities would be re-established on all sites where they were previously known to occur. Areas where sagebrush has been removed would be revegetated with sagebrush, and similarly, pinyon and juniper would be restored on sites where these species have been removed. Nonnative seedings would be returned to either sagebrush or pinyon-juniper communities.

This approach would attempt to manage public land to achieve no net loss of native communities, where they currently exist or existed in about 1950. The implementation of this alternative would not be consistent with current agency policies and contemporary science regarding ecological processes in the Intermountain West. This management prescription would result in continued proliferation of woody species such as pinyon and juniper within historic sagebrush and grassland dominated sites on the planning area. It also would result in the continued accumulation of heavy fuels in overmature shrub and tree communities until such areas burn through natural fires.

Although this alternative may not result in substantial short-term impacts, the long-term impacts would be substantial with much of the planning area that is currently occupied by pinyon-juniper and sagebrush being burned and subsequently converted to the herbaceous state or an altered state dominated by invasive annual vegetation.

Parameter – Pinyon-Juniper Woodlands

Although approximately 52 percent of the pinyon-juniper woodland vegetation type is identified for treatment under Alternative D, the limited treatment methods available under this alternative would make it difficult to implement the scale and nature of treatments necessary to achieve the program goal relative to this vegetation type.

Parameter – Aspen

Treatment methods such as elimination of grazing and other discretionary uses would be the primary management approach of this alternative. This could be coupled with limited use of selected herbicides in aspen stands where invasive species are present. Although these methods will encourage additional aspen regeneration and growth of understory species, they may be inadequate to restore the desired conditions in this vegetation type.

Parameter – High Elevation Conifer Species

Treatment methods such as elimination of grazing and other discretionary uses would be the primary management approach of this alternative. This could be coupled with limited use of selected herbicides in high elevation conifer stands where invasive species are present. Although these methods will encourage additional growth of understory species, they may be inadequate to restore the desired conditions and community structure in this vegetation type.

Parameter – Salt Desert Shrub

Treatment methods such as elimination of grazing and other discretionary uses would be the primary management approach of this alternative. This could be coupled with limited use of selected herbicides in areas where invasive species are present. These methods may be adequate to achieve the desired conditions in this vegetation type.

Parameter – Sagebrush (basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, and black sagebrush)

Although some 26 percent of the area occupied by sagebrush communities has been identified as subject to treatment under Alternative D, the treatment methods involved would focus on the control of invasive species and the seeding of native species into those areas that had previously been seeded with nonnative understory species. Thus, the overall rate of change toward achieving the desired range of conditions would likely be slow. It also is expected that under this alternative most of the sagebrush vegetation type would become more vulnerable to major fires due to increased accumulation of fine fuels.

Parameter – Mountain Mahogany

Although some 55 percent of the area occupied by mountain mahogany has been identified as subject to treatment under Alternative D, the treatment methods involved would focus on the control of invasive species and the seeding of native species into areas affected by natural disturbances such as wildland fires. Thus, the overall rate of change toward achieving the desired range of conditions would likely be slow. It also is expected that under this alternative most of the mountain mahogany vegetation type would become more vulnerable to major fires due to increased accumulation of fine fuels.

Parameter – Mojave Desert Vegetation

Vegetation treatment acreages would be the same as under the Proposed RMP, but treatment methods would focus on the control of invasive species. Livestock grazing and other discretionary uses would be eliminated throughout the planning area, thus, grazing would not be an available management tool. The absence of grazing may contribute to accumulation of fine fuels and enhanced fire risk within these communities, but also may accelerate the recovery of various desirable perennial species following earlier disturbances including fire.

Parameter – Riparian/Wetlands

Treatment of riparian and wetland areas would focus on areas with invasive or exotic species, while relying on natural processes for recovery of proper functioning condition in other areas. This would be a slower process than proposed in the other alternatives, but direct impacts of the approach would be few.

Parameter – Nonnative Seedings

Treatments would be applied under this alternative to convert existing nonnative seedings to the original native plant communities. Such treatments would be applied to approximately 11 percent of the area occupied by the type. Direct impacts associated with this conversion would be minimal in terms of new surface disturbance and effects to surrounding vegetation communities.

Impacts from Other Programs. Impacts to vegetation associated with soils, fish and wildlife, special status species, and visual resources management activities would be the same as or similar to those described for the Proposed RMP. Impacts to vegetation associated with watershed management would be the same as or similar to Alternative A.

Wild Horses. Alternative D would involve the same herd management areas as Alternative A, but herd populations would not be controlled within these areas. With annual population increases ranging up to 20 percent, it is expected that most of these herds would soon exceed the habitat capacity and devastate the vegetation resources within these herd management areas. The immediately surrounding areas would be impacted as well when herds moved outside the management areas to find forage until such animals could be removed by the Ely Field Office. Impacts would be both short and long term.

Visual Resources. Approximately 11.5 million acres would be classified as Visual Resource Management Class I or II, which could affect planning of vegetation treatments.

Renewable Energy. This alternative would eliminate the potential development of renewable energy resources within the decision area.

Lands and Realty. There would be no net loss of public lands or new land use authorizations issued within the planning area. Thus, this alternative would involve fewer disturbances associated with vegetation impacts than any of the other alternatives.

Travel Management and Off-highway Vehicle Use. This alternative would eliminate almost all off-highway vehicle use and the associated impacts of such activities to vegetation. Over several years, the trails and other areas currently impacted by these activities would naturally revegetate with a combination of invasive annual species and native species from the surrounding vegetation communities.

Recreation. Organized recreational events such as motorcycle and truck races would be eliminated in this alternative and any remnant disturbed areas from past events would be allowed to naturally revegetate with a combination of invasive annual species and native species from the surrounding vegetation communities. The elimination of permits for hunting guides and outfitters in this alternative would reduce the level of backcountry activities and corresponding disturbance of vegetation.

Livestock Grazing. Alternative D includes total removal of domestic livestock from the entire planning area. While this would contribute to the recovery of vegetation in situations where improper grazing practices are or have been a primary contributing factor to degradation of vegetation communities, the absence of grazing also would remove one of the important management tools often used for vegetation manipulation, including weed control. Courtois et al. (2004) found that 65 years of protection from grazing on 16 exclosures at different locations across Nevada resulted in relatively few differences between vegetation inside the exclosures and that exposed to moderate grazing outside the exclosures. Where differences occurred, total vegetation cover was greater inside the exclosures while density was greater outside the exclosures. Protection from grazing failed to prevent expansion of cheatgrass into the exclosures.

During the short term, removal of grazing may facilitate recovery of perennial understory species in those communities where they are abundant enough to provide natural seed sources. Similarly, with reduced levels of herbivory, the amount of residual vegetation production and seeds would be increased with correspondingly increased ground cover (litter). These effects would facilitate seedling establishment of perennial herbaceous species, where they are present and may currently be limited by spring or summer grazing. However, allowing plants to grow without livestock herbivory can accomplish only part of what is needed to keep many areas from transitioning across a threshold to a woody dominated state with little resistance to later transitioning to a weedy state.

Forest/Woodland and Other Plant Products. All harvest of native plant products, except for American Indian collection of pinyon nuts, would be eliminated in this alternative. This action would increase seed availability for natural reseeding, increase accumulation of woody fuels in woodland types, reduce travel and off-highway vehicle use in areas currently used for harvest of plant materials, and reduce potential for spread of invasive plant species in both the short and long term.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Fire Management. Fire management would involve minimal suppression except for human-caused fires and those that threaten life or property. This alternative would lead to major widespread wildland fires, increased risk for spread of cheatgrass and other invasive species along with a corresponding increase in flashy fine fuels, and resultant increased probability for intense, large-scale wildland fires. With the combination of minimal vegetation management and minimal fire suppression in this alternative, it is expected that wildland fires would increase dramatically over the long term. Major rehabilitation efforts would be required to prevent the burned areas from becoming dominated by invasive annual grasses and forbs. As a primary result, much of the planning area that is currently occupied by pinyon-juniper and sagebrush would eventually be converted to the herbaceous state or an altered state dominated by invasive annual vegetation over the long term.

Noxious and Invasive Weed Management. The constraints on use of selected herbicides such as the sulfonylurea group under Alternative D would seriously reduce the options for control of cheatgrass on the planning area since some of the chemicals included in those groups are among the best available for this control. The constraints on herbicide use and the relative absence of fire suppression are expected to result in a substantially increased short-term and long-term risk for spread of cheatgrass and other invasive species.

Special Designations. Since all discretionary uses would be eliminated under this alternative, there would be no need for Special Designations. It is not expected that this change of status (e.g., eliminating the three existing ACECs) would, in and of itself, have any impact on vegetation, especially relative to the other major changes contained within this alternative.

Conclusion. Exclusion of livestock from all public land would allow natural succession to improve the condition of many vegetation communities currently supporting desirable species. Altered vegetation communities dominated by annual species would improve little toward the desired range of conditions over the life of the plan. Fine fuels would increase with limited utilization of herbaceous growth, resulting in increased size of wildland fire and increased occurrence and frequency of fire near frequent sites of ignition. Limited suppression of wildland fire also would increase the average fire size, resulting in more frequent impacts to affected vegetation resources. The condition of many vegetation communities currently dominated by desirable mosaics of native species would be maintained or improved in those areas not subject to frequent fire. Frequent wildland fires in healthy, native communities, would cause a decline in vegetation diversity and health, leading to decline in natural levels of nutrient, water, and energy cycling. This alternative would result in continued proliferation of tree species into historic sagebrush-dominated sites with minimal prospects for restoration of resiliency. Therefore, this alternative would fail to achieve the program goal.

4.6 Fish and Wildlife

Impact Issues

For aquatic species and their habitats, the primary mechanisms through which management activities could affect aquatic habitat and aquatic biota include habitat alteration or loss, sedimentation due to soil disturbance and vegetation removal, water quality changes, and reductions in surface water quantity. The focus of the analysis was on surface water habitat (i.e., perennial streams, springs, wetlands, reservoirs, or lakes) with persistent year-round flow or water availability.

The primary impact issues to wildlife as they relate to resource conflicts with other management programs on the planning area include direct loss of wildlife, loss or fragmentation of habitat, alteration of vegetation cover and composition, and water availability. Generally, anything that affects vegetation or watersheds also would affect wildlife habitat and, potentially, wildlife populations.

Table 4.6-1 provides an analysis of the relative degree of overlap between several types of priority wildlife habitats and potential land disposals, designated corridors, special recreation management areas, and ACECs for each of the alternatives.

Assumptions for Analysis

- The Nevada Department of Wildlife would manage populations of big game (i.e., mule deer, elk, pronghorn antelope, and bighorn sheep) commensurate with available forage and with consideration of other multiple uses.

General Impacts from Wildlife Treatments Tools and Techniques

Treatment tools for wildlife are summarized in Appendix G along with the tools used in conjunction with various other resource programs. The following paragraphs provide a general overview of the impacts anticipated from the use of major wildlife treatment tools.

Water escape ramps. Escape ramps such as bird ladders or other devices would minimize potential impacts to small mammals, birds, and herptiles from becoming trapped in water troughs and storage tanks.

Elk passes. Elk passes and other similar devices would minimize potential impacts to big game species by allowing daily or seasonal (e.g., migration) movements of big game species across fences that would otherwise prohibit the movement of big game species, cause injury to wildlife, or cause damage to the fence.

Table 4.6-1
Overlap of Management Actions with Priority Wildlife Habitats

	Proposed RMP Affected Area		Alternative A Affected Area		Alternative B Affected Area		Alternative C Affected Area		Alternative D Affected Area	
Priority Wildlife Habitats[1]	Acres	%[2]	Acres	%[2]	Acres	%[2]	Acres	%[2]	Acres	%[2]
Overlap of Potential Land Disposal Areas										
Desert Bighorn Sheep Occupied Habitat	641	0	24	0	896	0	4,483	0	0	0
Rocky Mountain Bighorn Sheep Occupied Habitat	0	0	0	0	0	0	0	0	0	0
Elk Crucial Summer Habitat	0	0	0	0	0	0	2,160	1	0	0
Mule Deer Crucial Summer Habitat	12,202	1	1,046	0	3,065	0	24,136	2	18	0
Mule Deer Crucial Winter Habitat	298	0	0	0	5,105	1	19,990	3	0	0
Pronghorn Crucial Winter Habitat	0	0	0	0	0	0	0	0	0	0
Overlap of Designated Corridors										
Desert Bighorn Sheep Occupied Habitat	9,106	1	8,690	1	9,280	1	19,645	2	8,690	1
Rocky Mountain Bighorn Sheep Occupied Habitat	106	0	106	0	393	1	2,011	3	106	0
Elk Crucial Summer Habitat	895	0	895	0	1,742	1	4,414	2	895	0
Mule Deer Crucial Summer Habitat	9,882	1	9,565	1	11,551	1	22,305	2	9,565	1
Mule Deer Crucial Winter Habitat	14,353	2	10,871	2	18,388	3	71,786	10	10,871	2
Pronghorn Crucial Winter Habitat	0	0	0	0	0	0	9,323	11	0	0
Overlap of Moderate and High Potential Wind Energy Areas										
Desert Bighorn Sheep Occupied Habitat	37,802	4	37,802	4	37,802	4	37,802	4	37,802	4
Rocky Mountain Bighorn Sheep Occupied Habitat	11,004	17	11,004	17	11,004	17	11,004	17	11,004	17
Elk Crucial Summer Habitat	23,215	9	23,215	9	23,215	9	23,215	9	23,215	9
Mule Deer Crucial Summer Habitat	57,015	5	57,015	5	57,015	5	57,015	5	57,015	5
Mule Deer Crucial Winter Habitat	15,732	2	15,732	2	15,732	2	15,732	2	15,732	2
Pronghorn Crucial Winter Habitat	799	1	799	1	799	1	799	1	799	1
Overlap of Moderate and High Potential Solar Energy Areas										
Desert Bighorn Sheep Occupied Habitat	248,154	27	248,154	27	248,154	27	248,154	27	248,154	27
Rocky Mountain Bighorn Sheep Occupied Habitat	3,165	5	3,165	5	3,165	5	3,165	5	3,165	5
Elk Crucial Summer Habitat	51,445	20	51,445	20	51,445	20	51,445	20	51,445	20
Mule Deer Crucial Summer Habitat	240,590	23	240,590	23	240,590	23	240,590	23	240,590	23
Mule Deer Crucial Winter Habitat	360,335	50	360,335	50	360,335	50	360,335	50	360,335	50
Pronghorn Crucial Winter Habitat	47,853	58	47,853	58	47,853	58	47,853	58	47,853	58
Overlap of Special Recreation Management Areas										
Desert Bighorn Sheep Occupied Habitat	168,075	18	NA[3]	N/A	250,350	27	250,350	27	0	0
Rocky Mountain Bighorn Sheep Occupied Habitat	3,696	6	NA[3]	N/A	5,966	9	5,966	9	0	0
Elk Crucial Summer Habitat	10,417	4	NA[3]	N/A	126,161	49	126,161	49	0	0
Mule Deer Crucial Summer Habitat	266,879	26	NA[3]	N/A	471,225	45	469,889	45	0	0
Mule Deer Crucial Winter Habitat	8,495	1	NA[3]	N/A	257,831	36	231,017	32	0	0
Pronghorn Crucial Winter Habitat	0	0	NA[3]	N/A	0	0	0	0	0	0
Overlap of Special Recreation Permit Areas										
Desert Bighorn Sheep Occupied Habitat	69,191	8	0	0	0	0	69,191	8	0	0
Rocky Mountain Bighorn Sheep Occupied Habitat	0	0	0	0	0	0	0	0	0	0
Elk Crucial Summer Habitat	15,586	6	0	0	0	0	15,586	6	0	0
Mule Deer Crucial Summer Habitat	171,144	16	0	0	83,321	8	171,144	16	0	0
Mule Deer Crucial Winter Habitat	150,007	21	0	0	56,642	8	150,007	21	0	0
Pronghorn Crucial Winter Habitat	0	0	0	0	0	0	0	0	0	0
Overlap of Areas of Critical Environmental Concern										
Desert Bighorn Sheep Occupied Habitat	73,575	8	47,254	5	83,687	9	83,687	9	0	0
Rocky Mountain Bighorn Sheep Occupied Habitat	3,476	5	0	0	6,661	11	6,661	11	0	0
Elk Crucial Summer Habitat	390	0	0	0	5,953	2	5,793	2	0	0
Mule Deer Crucial Summer Habitat	7,138	1	0	0	9,866	1	3,681	0	0	0
Mule Deer Crucial Winter Habitat	4,317	1	0	0	6,269	1	6,269	1	0	0
Pronghorn Crucial Winter Habitat	0	0	0	0	0	0	0	0	0	0
Overlap of Designated Wilderness										
Desert Bighorn Sheep Occupied Habitat	0	0	0	0	0	0	0	0	0	0
Rocky Mountain Bighorn Sheep Occupied Habitat	0	0	0	0	0	0	0	0	0	0
Elk Crucial Summer Habitat	0	0	0	0	0	0	0	0	0	0
Mule Deer Crucial Summer Habitat	0	0	0	0	0	0	0	0	0	0
Mule Deer Crucial Winter Habitat	6,837	1	6,837	1	6,837	1	6,837	1	6,837	1
Pronghorn Crucial Winter Habitat	0	0	0	0	0	0	0	0	0	0

[1] Additional types of priority habitats (e.g., fawning, calving, lambing areas) exist within the decision area but have not been mapped and are not included in this analysis.

[2] Percentage of a priority wildlife habitat that overlap management actions is based on the priority habitat of that type within the decision area.

[3] Specific geographic boundaries for the Loneliest Highway Special Recreation Management Area have not been defined.

Temporal Restrictions. In many cases, temporal restrictions are used to restrict recreation, development, treatment, and other permitted activities during sensitive breeding and seasonal periods for wildlife. Temporal restrictions would minimize potential impacts to wildlife from direct disturbance of habitat and indirect effects from increased noise and human presence.

Livestock fencing. Livestock fencing is commonly used to control livestock distribution and to exclude livestock from important seasonal wildlife habitats (e.g., riparian zones, seasonal big game winter habitats). Wildlife generally would benefit from the exclusion of livestock by increasing available forage and water resources, improving seasonal habitats, and reducing habitat degradation. However, livestock fencing also could impede seasonal movements of big game and restrict big game from important forage and water resources.

Prescribed fire and wildland fire use. Prescribed fire and wildland fire use would be applied along with other treatment methods (e.g., mechanical, chemical, and biological) to reduce heavy fuel loading and improve habitat to desired ranges of vegetation conditions. In the short term, localized fire prescriptions would generally benefit some wildlife species by increasing quantity and quality of herbaceous forage and ground cover. In the long term, various other species would be benefited by improved seasonal habitats. For example, elk would generally benefit soon after the vegetation treatments, while mule deer and greater sage-grouse may not benefit until 20 to 30 years later.

Water developments. Water developments are generally used to increase the distribution and availability of water for wildlife and could be used to mitigate multiple-use impacts to wildlife species from loss of habitat or reduction of natural waters. Although wildlife would generally benefit from water developments, it is expected that some species (e.g., elk and pronghorn) would benefit more than others and expand their distributions into previously unoccupied ranges.

Telemetry. Radio-telemetry is a common tool used to acquire detailed data on many aspects of wildlife biology including habitat use, home range size, mortality and survivorship, and migration timing and routes. Since many wildlife species are secretive and difficult to observe, radio-telemetry provides a valuable tool to learn more about a species' life-history. Because of the invasive nature of telemetry projects, impacts can occur if animals are unduly stressed or influenced by the capture technique, or if the behavior of the animal wearing the radio tag is not representative of normal behavior for the species.

Interactions with Other Programs

The fish and wildlife management program within the planning area potentially would be affected by actions within the resource management programs for water resources, vegetation, wild horses, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, watershed management, fire management, noxious and invasive weed management, and special designations.

Goal

Provide habitat for wildlife (i.e., forage, water, cover, and space) and fisheries that is of sufficient quality and quantity to support productive and diverse wildlife and fish populations, in a manner consistent with the principles of multi-use management, and to sustain the ecological, economic, and social values necessary for all species.

Northeastern Great Basin Resource Advisory Council Standard. Habitats exhibit a healthy, productive and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Mojave/Southern Great Basin Resource Advisory Council Standard. Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Objective

To manage suitable habitat for aquatic species, priority wildlife species, and migratory birds in a manner that will benefit wildlife species directly or indirectly and minimize conflicts among species and wildlife or habitat losses from permitted activities. Priority species for terrestrial wildlife habitat management are elk, mule deer, pronghorn antelope, Rocky Mountain bighorn sheep, desert bighorn sheep, and migratory birds; because these species cover the entire Ely RMP planning area. Priority habitats include calving/fawning/kidding/lambing grounds, crucial summer range, crucial winter range, and occupied desert bighorn sheep habitat.

To use wildlife water developments, both natural and artificial, to improve the condition of wildlife habitat, and to use artificial wildlife water developments to mitigate impacts to wildlife species from loss of natural water sources or loss of habitat.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to fish and wildlife also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. Mitigation measures were considered within the following impact analysis section in response to anticipated impacts. Additional "proposed mitigation" for fish and wildlife is identified in Section 4.29, Proposed Mitigation and Potential Effectiveness. In order to be carried forward as part of the Approved RMP, these "proposed mitigation measures" would have to be incorporated into the final decision documented in the Record of Decision. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

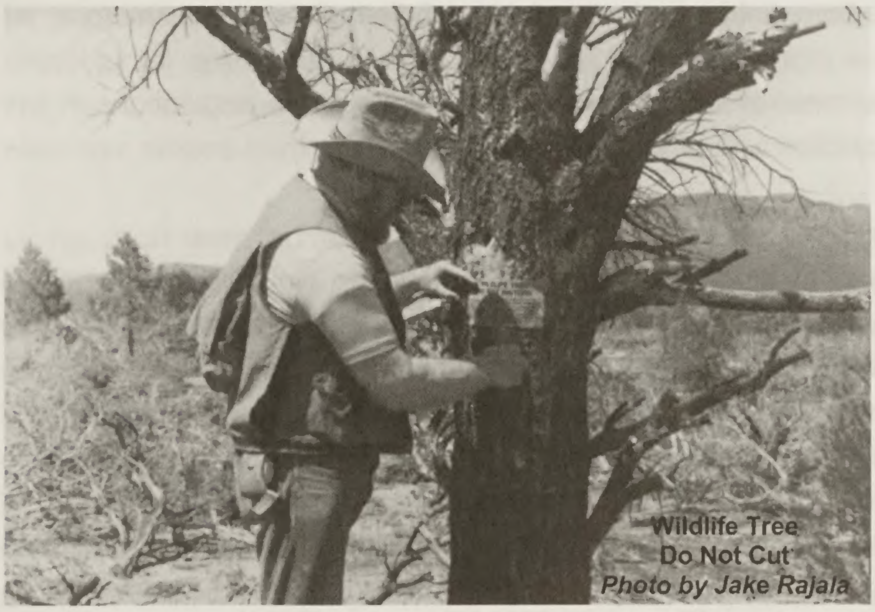
Proposed RMP

Impacts from Fish and Wildlife Management Actions.

Parameter – General Wildlife Habitat Management (Aquatic and Terrestrial)
As a result of the Ely Field Office's emphasis to manage priority habitat for priority species, habitat quality would remain at current levels or improve selected parameters such as streambank stability and riparian vegetation development. Improvements could involve revegetation in riparian areas, adding rip-rap or other bank stabilization material, or placement of structures in streams for additional cover. The impacts of enhancement actions could be improvements in the amount of streamside cover and instream structure and reductions in sediment input as a result of more stable streambanks and lesser amounts of surface disturbance in areas adjacent to waterbodies. If the waterbody contains aquatic species that are considered special status species, emphasis would be placed on habitat requirements for these species. Input would be requested from the U.S. Fish and Wildlife Service in situations where federally listed species are present or could be established through recovery efforts. Habitat improvements would provide additional habitat for aquatic species and could affect decisions by the Nevada Department of Wildlife regarding future stocking efforts.

The Proposed RMP would strive to mitigate all discretionary permitted activities that disturb priority habitat by improving 2 acres of comparable habitat for every 1 acre of disturbance on a project-by-project basis. The impact of this management action would be a two-fold increase in the quality of available priority habitat in relation to the area affected by a specific project.

Beyond management of priority habitat for priority species, management in the remainder of the area would emphasize the conservation and maintenance of healthy, resilient, and functional vegetation communities. This habitat management approach would serve the needs of most wildlife species occurring within the planning area. The desired range of vegetation conditions to meet wildlife habitat requirements would be achieved through treatments identified in the vegetation section. On a watershed and landscape level, wildlife numbers and diversity would increase as habitat is improved.



Wildlife Tree
Do Not Cut
Photo by Jake Rajala

Adhering to the standards in Manual 1745 and the Memorandum of Understanding between the BLM and the Nevada Department of Wildlife would balance species numbers with available habitat.

Management of habitat in the vicinity of national wildlife refuges would be conducted in a manner compatible with the objectives of the refuge, thereby enhancing overall habitat and movement opportunities for wildlife populations in and around the refuges.

The mitigation goal of 2 acres of comparable habitat for each 1 acre of disturbance would increase the quality of priority habitat for priority species.

Parameter – Elk, Mule Deer, Pronghorn Antelope, and Rocky Mountain Bighorn Sheep Habitat
Priority habitats, including primary limiting habitat types for elk, mule deer, pronghorn, Rocky Mountain bighorn sheep, and migratory birds, would be managed to support species populations equal to or greater than those that currently exist while maintaining balance with other wildlife habitat objectives. Conflicting resource uses may be restricted in some of these habitats during critical periods such as calving/fawning/kidding/lambing season or winter. These restrictions would reduce wildlife stress and mortality during such periods. On a watershed basis, implementation of restoration activities and management actions to achieve desired ranges of vegetation conditions would promote increased shrub, browse, and forb forage production; increased escape and thermal cover; a reduction in habitat competition; and improved breeding and seasonal habitats and migration corridors for wildlife including mule deer and pronghorn. On a landscape level, restoration and habitat management to achieve desired ranges of vegetation conditions would impact wildlife within the Great Basin ecological system by reducing habitat degradation and fragmentation, and promoting ecological health and vegetation resiliency.

Removal of sheep and goat grazing within occupied Rocky Mountain bighorn habitat as grazing permits are considered for any changes would reduce the potential for the transmission of disease to native sheep.

Based on the assumption that Nevada Department of Wildlife would manage big game populations in line with available forage, there would be no competition with other wildlife species.

Parameter – Desert Bighorn Sheep Habitat
Priority habitats, including primary limiting habitat types for desert bighorn sheep would be managed to support species populations equal to or greater than those that currently exist while maintaining balance with other wildlife habitat objectives. Conflicting resource uses may be restricted in some of these habitats during critical periods such as lambing season or winter. These restrictions would reduce wildlife stress and mortality during such periods. Implementation of restoration activities and habitat management to achieve appropriate ranges of vegetation conditions within Mojave Desert mountain and desert scrub habitats would increase available forage and cover, structure, and breeding and seasonal habitats for desert bighorn sheep in the long term. On a landscape level, restoration and habitat management would benefit desert bighorn sheep by reducing habitat degradation and fragmentation, and promoting ecological health and vegetation resiliency. Overall habitat quality for desert bighorn sheep also would be improved through the adherence to current policies.

Parameter – Migratory Bird Habitat

On a very local level, migratory bird species would be impacted differently depending on the specific restoration action implemented. On a watershed and landscape level, most migratory bird species would benefit from the mosaic of vegetation created under the proposed RMP. Implementation of the Migratory Bird Best Management Practices for the Sagebrush Biome may aid in protection of these species and enhancement of their habitats.

Parameter – Wildlife Water Developments

Implementation of the Proposed RMP would increase water availability and improve habitat quality for both game and nongame species within the planning area. Implementing riparian restoration actions would improve riparian community health and resiliency which would benefit both riparian dependent species and upland species. Installing water developments would improve the distribution of wildlife species, especially big game. Water development could be installed to mitigate loss or fragmentation of habitat and/or address resource conflicts. This also could lead to increased populations.

Impacts from Other Programs.

Water Resources. Actions that could occur as part of water resource development include water rights acquisitions and water supply. These actions would assist in providing stable water supplies for fish and wildlife.

Vegetation. Since vegetation treatments would increase as part of this alternative, potential short-term erosion could occur in the disturbed areas. If treatment sites are located within the drainage area of a perennial stream, sediment could enter the water body during runoff. Water temperature increases also could occur in stream segments where riparian canopy is removed. Any effect on fish habitat is expected to be short-term in duration and localized in terms of the affected area. Following the best management practices for application of herbicides near aquatic habitats would minimize the impacts to fisheries. In the long-term, additional vegetation treatments could improve fish habitat conditions through soil and water retention, stream bank stability, and overhanging cover from riparian vegetation.

In the short term, some terrestrial wildlife would be temporarily displaced from areas being treated, and mortality for some less mobile creatures may occur. In the long term, the quality of wildlife habitat would be enhanced through increased forage, improved perennial vegetation cover and composition, and better community structure. On a watershed and landscape level, restoration actions would create a mosaic of different vegetation phases and states, which would provide habitat for a greater diversity of wildlife species.

Management and restoration of Mojave Desert vegetation would affect wildlife species by controlling annual invasive species (e.g., red brome), and improving perennial vegetation cover and composition in the short-term. This would improve overall habitat quality in the long-term.

Wild Horses. Potential impacts to aquatic habitat and fish species, which overlap with one or more perennial stream segments, could occur. Surface disturbance and loss of vegetation would be anticipated where horses concentrate near water sources. Horses could directly affect aquatic habitat by disturbing stream substrates and bank vegetation. Fish could be affected due to habitat alteration, removal or reduction of riparian vegetation, and localized increased sediment. Potential impacts to creeks would be eliminated due to the elimination of herd management areas.

Wildlife habitat would be improved on 1.6 million acres that would no longer be managed as herd management areas and where the wild horses would be removed under the proposed RMP. With wild horse populations managed at appropriate management levels for the 3.7 million acres remaining in herd management areas, there would be no long-term impact to wildlife habitat. Areas where wild horses tend to concentrate (e.g., around springs) may be avoided by wildlife; however, these areas would be evaluated, and corrective actions (e.g., fencing to exclude wild horses from spring sources) could be implemented during the watershed analysis process.

Lands and Realty. Two streams (Duck Creek in White Pine County and Clover Creek in Lincoln County) are located within possible land disposal areas for the Proposed RMP. Game fish species that occur in these streams include rainbow trout in Clover Creek and rainbow trout, brown trout, and brook trout in Duck Creek. In addition, several other disposal areas are adjacent to aquatic habitat. Potential impacts on aquatic habitat depend on the type of activity proposed for the land. If new surface activities occurred on the land, aquatic habitat could be directly altered or indirectly affected due to increased sedimentation and contamination in runoff. Permit requirements under the Clean Water Act would minimize potential impacts to perennial streams by implementing erosion control, storm water runoff, discharge, and spill control measures. Land activities could require the use of water from a perennial stream, which could reduce the amount of habitat available for fish. The magnitude of the impact would depend upon the volume of water withdrawn. Implementation of a management action to retain all springs and creeks that contain fisheries in federal ownership would help maintain existing and future fish populations.

Land use authorizations (i.e., rights-of-way, permits, leases, and easements) could impact aquatic habitat through increased sedimentation during construction, operation, and maintenance if these projects are located adjacent to lakes and streams. Utility corridors are located near the White River or cross other drainages throughout the planning area. These other drainages generally are unnamed ephemeral streams. Rights-of-way development within these corridors could result in short-term sedimentation or riparian disturbance. Development of projects would be evaluated for effects on aquatic habitat and fisheries, and mitigated as needed, on a case-by-case basis in accordance with NEPA. These impacts would be reduced if multiple rights-of-way are co-located within designated corridors.

Under the Proposed RMP, approximately 75,600 acres of land would be available for possible land disposal. Potential land disposals would be evaluated for effects on wildlife and its habitat on a case-by-case basis, in accordance with NEPA. Since most land disposals are anticipated to be adjacent to existing communities, habitat fragmentation would be minimized. As shown in **Table 4.6-1**, lands identified for disposal generally overlap less than 1 percent of each of the types of priority habitat mapped within the decision area.

Designation of corridors in the Proposed RMP would have minimal impact to wildlife and wildlife habitat, other than the fact that such designation would concentrate the location of future rights-of-way in these areas. It is primarily the issuance of rights-of-way within the corridor that would have an impact. These actions would be subject to an additional level of NEPA analysis at that time. Potential impacts to wildlife would include the direct loss of habitat, and the added effect from habitat fragmentation. These impacts would be minimized if multiple rights-of-way are co-located within designated corridors. As shown in **Table 4.6-1**, designated corridors overlap 2 percent or less of any given type of priority wildlife habitat mapped within the decision area. Short-term impacts from all rights-of-way and communication sites would result from increased noise and human presence during construction. These effects are anticipated to occur incrementally over time and at scattered locations over the planning area. Potential impacts would include limited mortalities of smaller, less mobile species of wildlife (e.g., small mammals and reptiles) and the displacement of more mobile species into adjacent habitats. Displacement also could result in some local reductions in wildlife populations if adjacent habitats are already at carrying capacity. In areas where potential development intersects or approaches priority wildlife habitat (e.g., crucial seasonal ranges and breeding areas), resulting effects may require project-specific mitigation measures in order to minimize potential impacts. Development of utility projects and communication sites would be evaluated for effects on wildlife and wildlife habitat, and mitigated as needed, on a case-by-case basis, in accordance with NEPA.

Renewable Energy. The development of wind or solar energy resources could result in surface disturbance and sediment input to streams or reservoirs, if the projects or access rights-of-way are located in the drainage area and near the water bodies. Development of projects would be evaluated for effects on aquatic habitat and fisheries, and mitigated as needed, on a case-by-case basis in accordance with NEPA.

Potential impacts to the terrestrial wildlife from the development of renewable energy could occur throughout the entire planning area. High and moderate potential areas available for the development of wind and solar facilities consist of approximately 273,300 acres (2.3 percent of the planning area) and 7,216,400 acres (63.0 percent of the planning area), respectively (see **Maps 2.4.13-1** and **2.4.13-2**). Approximately 145,600 acres of the moderate to high wind energy potential area and 951,500 acres of the moderate to high solar energy potential area occur within priority habitat.

Conflicts from renewable energy development would likely have localized effects to terrestrial wildlife species and their habitats. Long-term impacts would result from habitat loss and increased habitat fragmentation until reclamation is completed and native vegetation has become reestablished. Short-term impacts would result from increased noise and human presence. These effects are anticipated to occur incrementally over time and at scattered locations over a large geographic area within the planning area. Potential impacts would include limited mortalities of smaller, less mobile species of wildlife, such as small mammals and reptiles, during construction activities; the displacement of more mobile species into adjacent habitats; and mortality of birds and bats by wind turbines. Based on observed mortalities at existing wind energy facilities, Erickson et al. (2001) estimate overall midrange levels of passerine species fatalities at 1.2 to 1.8 birds per turbine per year. Mortality rates vary among species and tend to be highest for nocturnal migrants. Mortality rates are affected by population densities, location and surrounding habitat, turbine design, and various other factors. Indirect impacts would include additional surface disturbances affecting habitat, increased noise and human presence, and increased habitat fragmentation. Raptors and waterfowl typically make up small percentages of the overall bird mortalities at wind energy developments. Bat mortality rates vary widely, depending on the location, species present, and population densities, but are generally in comparable ranges to observed bird mortalities.

Displacement also could result in some local reductions in wildlife populations if adjacent habitats are at carrying capacity. In areas where potential development intersects or approaches important wildlife habitat (e.g., seasonal ranges and breeding areas) and important flyways for migrating birds, resulting effects may require project-specific mitigation measures to minimize potential impacts. On a landscape scale, potential wildlife conflicts would result in long-term effects from increased habitat degradation and fragmentation. Development of renewable energy would be evaluated for effects on wildlife and wildlife habitat on a case-by-case basis, in accordance with NEPA.

Travel Management and Off-highway Vehicle Use. Effects of travel management on aquatic and fisheries habitat (e.g., sedimentation, vegetation loss, channel disturbance, etc.) would be reduced because off-highway vehicle use would be limited to designated roads and trails as determined through a subsequent public process and area-specific analysis. The maintenance and possible upgrade of existing roads near water bodies could result in sediment input due to surface disturbance. By implementing required erosion control measures during construction, sediment impacts to streams would be minimal. The restriction of off-highway vehicle use to designated roads and trails also would enhance terrestrial wildlife habitat and reduce disturbance to wildlife on over 10.3 million acres of the planning area.

Closure of approximately 400,000 additional acres of wilderness study areas and ACECs to all motorized travel also would benefit wildlife.

Recreation. Recreation activities could result in vehicle traffic and hiking near perennial streams containing fish. Vehicle use could result in localized sediment input to streams, as described for travel management. Recreational fishing also would occur in streams with game fish species (mainly trout). Concentrated recreation activities under the Proposed RMP would increase with the designation of five special recreation management areas. Dispersed recreation could result in surface disturbance and additional fishing pressure on perennial game fish streams and reservoirs.

Disturbance of terrestrial wildlife would increase within the five special recreation management areas and within the four special recreation permit areas established for competitive motorcycle events. The degree of disturbance would depend on how much use is made of these areas and how frequently the areas are used for recreation.

These special recreation management areas overlap substantially with various types of priority wildlife habitat, especially desert bighorn sheep occupied habitat and mule deer crucial summer habitat (see **Table 4.6-1**). The four special recreation permit areas for competitive motorcycle and truck events also overlay approximately 405,900 acres of priority wildlife habitats, including approximately 18 percent of the desert bighorn sheep occupied habitat and 26 percent of the mule deer crucial summer habitat.

Livestock Grazing. All perennial stream segments containing fisheries occur within grazing allotments. In most instances, only one perennial stream segment is located within a particular grazing allotment.

However, four allotments (Cherry Creek, Smith Creek, Baker Creek, and Geyser Ranch) contain two or three perennial segments within the allotment boundaries. The types of impacts resulting from grazing activities on fish and their habitat include erosion and sedimentation due to surface disturbance. Grazing activities potentially could affect all perennial streams, since grazing allotments encompass the entire planning area. Because grazing management must meet standards for riparian health (see Resource Advisory Council Standards and Guidelines, Appendix B), the effects of grazing on riparian vegetation would logically diminish as individual watersheds are analyzed and treatment plans, including any grazing adjustments, are implemented.

Wildlife conflicts with livestock grazing could include continued competition for forage, cover, and water resources within approximately 11.3 million acres throughout the planning area. Where livestock use is managed in line with available forage and wildlife populations are managed consistent with available habitat, this competition would be minimal. If livestock grazing is identified as a causal factor for nonattainment of the standards for rangeland health, corrective management actions would occur, which should improve wildlife habitat.

Livestock grazing will continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing will be maintained for 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use will be made as needed to meet or progress toward achievement of the standards.

Conflicts between Rocky Mountain bighorn sheep and domestic sheep grazing would continue on three allotments with occupied habitat in and around the mountain ranges in the northern portion of the planning area until changes in those grazing permits are considered. Expansion of Rocky Mountain bighorn sheep would continue to be limited because of domestic sheep grazing on 27 allotments (see **Table 4.6-2**) in unoccupied habitat. Overall habitat quality for desert bighorn sheep also would be improved through adherence to current policy for management of domestic sheep and goats in native wild sheep habitats as changes to grazing permits are considered. Until such changes occur, conflicts between desert bighorn sheep and domestic sheep would continue on nine allotments with occupied habitat. Expansion of desert bighorn populations may be limited because of domestic sheep grazing on these and 29 other allotments with unoccupied desert bighorn habitat. Overlap of desert bighorn sheep occupied and unoccupied habitat with domestic sheep grazing allotments is shown in **Table 4.6-3**.

Table 4.6-2
Occupied and Unoccupied Rocky Mountain Bighorn Sheep Habitat within Domestic Sheep Allotments

Domestic Sheep Allotment Name	Potentially Affected Habitat Acreage	
	Unoccupied	Occupied
Badger Spring	6,523	--
Becky Creek	4,058	--
Becky Springs	3,393	--
Chin Creek	25,825	--
Cold Creek	14,928	--
Copper Flat	9,038	--
Devils Gate	8,670	--
Duckcreek	2,748	--
Giroux Wash	690	--
Gold Canyon	17,999	--
Goshute Basin	9,911	--
Hamblin Valley	2,981	2,155
Indian George	14,180	--
Majors Allotment	9,651	2,050
Mallory Springs	7,835	--
Medicine Butte	103,991	--
Newark	42,336	--
North Steptoe	5,960	--
Railroad Pass	12,280	--
Red Hills	7,323	--
Sampson Creek	4,503	--
Second Creek	297	--
South Spring Valley	1,726	73
Taft Creek	1	--
Tippett	96,037	--
Tippett Pass	32,283	--
West Schell Bench	4,561	--

Adjustments to domestic sheep grazing will be subject to review in allotments overlapping bighorn sheep habitat when changes to grazing permits are considered. Field inspections will be conducted to evaluate effectiveness of natural barriers and topographic features in relation to current grazing use and the recommended buffer zone between species. Evaluations also will include a determination regarding moving grazing use to other areas or converting the kind of livestock from domestic sheep and goats to cattle use. This conversion to other kinds of livestock would substantially reduce the potential for transmission of disease from domestic sheep and goats to bighorn sheep populations. As a result, proposed management actions will result in increased population health and reduction of potential disease transfer to bighorn sheep. Long-term effects would include potential bighorn sheep expansion into unoccupied ranges and improved overall health of bighorn sheep populations.

Table 4.6-3
Occupied and Unoccupied Desert Bighorn Sheep Habitat within Domestic Sheep Allotments

Domestic Sheep Allotment Name	Use Area	Potentially Affected Habitat Acreage	
		Unoccupied	Occupied
Batterman Wash		225	--
Bennett Spring		26,211	--
Black Bluff		23,855	--
Black Canyon		5,983	--
Chimney Rock		25,248	--
Coal Valley Lake		41,197	--
Cold Spring		3,847	--
Crescent N-4		20,752	5,716
Crescent N-5		21,345	--
Dark Peak		1,668	--
Dry Farm		4,351	--
Duckwater		165,204	23,306
Forest Moon		7,247	--
Fox Mountain		9,620	11,456
Hamblin Valley		11,430	--
Highland Peak		16,998	--
Irish Mountain		44,089	4,791
Klondike		1,399	--
Lake Area		17,668	--
Little White Rock		15,760	--
Majors Allotment		7,335	--
Murphy Gap		11,281	--
Narrows		627	4,003
Needles		33,371	--
Shadow Wells		2,617	--
South Coal Valley		3,265	--
South Spring Valley		10,622	--
Timber Mountain		25,360	--
West Timber Mountain		6,887	--
Worthington Mountain		34,470	--
Wilson Creek	Atlanta	5,042	--
Wilson Creek	Deadman	223	22,739
Wilson Creek	Dry Lake Valley	16,115	2,812
Wilson Creek	Hamblin	69	--
Wilson Creek	Miller	4,857	--
Wilson Creek	Muleshoe/Maloy	2,914	18,401
Wilson Creek	Pioche Bench	4,691	--
Wilson Creek	Thorley	--	2,539

Forest/Woodland and Other Plant Products. The harvest of vegetation products for public and commercial use could result in impacts to aquatic resources, if activities occur close to streams containing fish. The types of impacts that could result from firewood cutting, post and pole harvest, Christmas tree removal, and pinyon pine nut harvesting include increased short-term sedimentation and fuel spill risks. Removal of riparian canopy above streams also could result in increased water temperatures. The magnitude of potential impacts would depend upon the proximity of the harvest area to the perennial stream, extent of surface disturbance, and drainage characteristics such as gradient and extent of vegetation cover. Overall, these impacts are expected to be localized and of short duration. In the long term, harvest as part of the vegetation treatment program is expected to contribute to enhanced stream flows and stability.

Management of forest/woodland and other plant products uses would result in short-term seasonal effects on terrestrial wildlife from increased noise and human presence. These effects would be most apparent within priority wildlife habitats. Because of the low demand for forest/woodland and other plant products, there would be no long-term impact to wildlife habitat within the planning area. Implementation of best management practices would reduce potential impacts to wildlife. In the long term, harvest as part of the vegetation treatment program is expected to increase vegetation diversity and enhance wildlife habitat in these communities.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario would be disturbed throughout the 11.5 million acres of the planning area. Potential short term impacts include vegetation loss, habitat fragmentation, wildlife displacement, and increased noise and human presence. Long term impacts could include irretrievable loss of habitat, change in vegetation composition, and continuing habitat fragmentation and wildlife displacement. All proposed mineral actions would be evaluated on a case-by-case basis with specific recommended mitigations and best management practices. Closed areas and oil-and-gas stipulations will provide further protection and mitigation of potential disturbances to wildlife and wildlife habitat.

Based on comparison of the high potential oil and gas resources to game fish streams, the following streams overlap with high potential fluid minerals: White Pine County (Huntington, Duck, Tailings, South Fork Willow, North, Geyser, Willard, Silver, Baker, and Big Springs creeks), Lincoln County (Meadow Valley Wash), and Nye County (Cherry, South Fork Cottonwood, Forest Home, and Pine creeks). Of these streams, development of fluid minerals would be closed in areas surrounding Baker, Geyser, Duck, and North creeks in White Pine County. Potential oil and gas development could occur within active lease areas, which overlap with four game fish streams (Duck, Illipah, Huntington, and East creeks) and one reservoir (Illipah) in White Pine County. No fish streams overlap with active leases in Lincoln or Nye counties. Development of mineral materials and locatable minerals also could occur in areas with potential mineral resources. The following drainages would be closed to development of solid, locatable, and mineral materials: Baker, Cleve, Duck, Geyser, Goshute, Hendry's, Illipah, North, and South Fork Willow creeks in White Pine County and Clover Creek in Lincoln County.

If future development occurred in the drainages that are open to mineral development, potential effects on nonnative fish and their habitat could occur. Surface disturbance activities associated with mineral development could include construction of access roads and site facilities and operation of the mine or wells. Impacts could include increased sedimentation, water withdrawals, and water quality contamination due to leaks or spills of fuel or other chemicals used during operation. Water quantity also could be affected if water is withdrawn from surface water sources. Potential impacts to fish from these activities could include loss or alteration of habitat, changes in water quality, and removal of riparian vegetation. Potential impacts would be minimized by implementing lease stipulations and best management practices that protect water quality and quantity and associated habitat conditions.

Fish habitat also could be affected by geothermal development. Potential impacts to fish habitat could include surface disturbance and increased sedimentation for construction of roads and production facilities. Geothermal development also could reduce surface flows.

Watershed Management. The process establishes procedures for determining the current physical and biological conditions of a watershed, which in turn evaluates its ecological health. To date, nine watershed analyses (Antelope Valley, North Antelope, Clover Creek South, Gleason Creek, North Spring Valley, Smith Valley, South Steptoe, Spring Valley, and Steptoe A) are in progress with completion scheduled for 2006. Other watershed analyses are scheduled for completion in the next 10 years. As these assessments are completed, various adjustments in resource management would be implemented to ensure that appropriate watershed, vegetation, and water quality standards are met. It has been speculated that continuation of the historic management in watersheds could result in reduced water quality and quantity and degradation of riparian zones (Perryman et al. 2003). In the long term, the watershed analyses and restoration treatments would help to improve aquatic habitat by improving stream condition and riparian vegetation. Numerous standard operating procedures are part of the watershed restoration program to protect surface water quality in terms of sedimentation and possible contamination from various activities. The types of factors affecting aquatic habitat and species are discussed in the various interrelated programs. Restoration of all identified treatment areas would take many decades under this alternative. In the short term, the watershed analyses would identify management actions and treatments to improve fish and wildlife habitat on the 41 high priority watersheds. Collectively, these priority watersheds include 653 miles of perennial streams. The rate of completion of watershed analyses, evaluations, and implementation of watershed restoration strategies would be substantially increased. In the long term, all watersheds would be analyzed, and after standards for rangeland health have been met at the watershed level, all wildlife would benefit. The additional forage resulting from vegetation treatments would be managed in a balanced approach with reservation for watershed maintenance and wildlife and allocations to livestock and wild horses.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available), and other tools would be used to the greatest extent practical under the Proposed RMP. It is expected that a greater total area (and more streams) would be affected by fire than under current management. Short-term erosion and sedimentation would likely occur following wildland fires, wildland fire use, and, to a lesser extent, following prescribed fire and application of other tools (e.g., mechanical or herbicide). To reduce these impacts, emergency stabilization and rehabilitation projects could be developed and implemented. In the long-term, vegetation would recover and provide cover attributes with a lower fire risk.

Prescribed fire, wildland fire use (approximately 8.9 million acres available), and other tools would be used to the greatest extent practical under the Proposed RMP. In the short term, it is anticipated that treatment areas would result in increased herbaceous forage and ground cover for wildlife species. In the long term, on a landscape level, restoration and habitat management would impact wildlife by improving ecological health, vegetation resiliency, and overall habitat quality. Return to historical fire regimes and condition classes would reduce the impacts to fish and wildlife when fires occur.

Fuels treatment activities would be conducted in various wildland urban interface areas to reduce fire risk to communities and homes. These activities would affect limited acreages of wildlife habitat by reducing shrub and tree density and creating herbaceous firebreaks around such areas. Overall effects to wildlife populations would be evaluated in site-specific NEPA analyses but would be generally localized and of limited consequences.

Fire suppression activities also may impact wildlife in terms of water withdrawal from local streams and waterbodies, increased human activity and traffic on access routes, and potential spills of fuel and chemicals. These effects would generally be localized and of short duration in comparison to the long-lasting effects of habitat alteration on the burned areas.

Noxious and Invasive Weed Management. Noxious and invasive weed management activities would result in varying effects on aquatic habitat depending upon the type of activity. In terms of chemical treatment, potential toxic effects on aquatic species would be avoided by following label instructions regarding selection and application of herbicides. Potential toxic effects could occur if an accidental chemical or fuel spill or leak entered a water body containing fish species (BLM 2000d). The mechanical removal of weeds would result in soil disturbance, which could contribute increased sediment input into water bodies during runoff events. Increased sediment could alter fish habitat by covering bottom substrates and reducing spawning habitat or adversely affecting macroinvertebrate food sources for fish. The duration of sediment-related effects would be short-term in duration (i.e., several months to several years until new vegetation is established). Over the long term, removal of invasive weeds and re-establishment of native riparian vegetation would benefit the aquatic resources present.

The eradication of tamarisk along streams would remove overhanging cover that provides shade and streamside structure. Removal of tamarisk also could result in localized sediment increases due to reduced bank stability. After new vegetation is established in several years, cover and bank stability would be replaced along the stream. Removal of tamarisk would potentially increase water quantity in streams. Tamarisk consumes relatively high amounts of water compared to other herbaceous or non-riparian species. It also contributes to the salt content of soils through the decay of salt-laden foliage.

Management of noxious weeds may cause some temporary and localized impacts to terrestrial wildlife species as a result of noxious weed eradication techniques (e.g., use of herbicides or mowing) within the planning area. Impacts to wildlife species would not be expected to cause population level effects. Treatments designed to decrease or eliminate noxious weeds would benefit wildlife habitats in the long term by reducing or eliminating the chances for dominance of plant species with limited forage or cover values, such as cheatgrass and tamarisk.

Special Designations. The designation of additional ACECs under the Proposed RMP (e.g., Condor Canyon and Lower Meadow Valley Wash) would reduce impacts to streams and fish as a result of restricted activities in stream channels. Surface disturbance to the watershed would be reduced by limiting or eliminating new rights-of-way, off-highway vehicles, road maintenance, and new roads in ACECs and designated wilderness. These impacts would be long term, since it would take at least several years or longer to improve habitat conditions. Establishment of the additional ACECs, with their prescriptions for limited resource use, also would benefit terrestrial wildlife species in these areas by enhancing forage availability and reducing conflicts associated with other uses (see **Table 4.6-1**).

Conclusion. Aquatic habitat management would include habitat enhancement for existing aquatic species. Vegetation treatments could result in increased short-term impacts from erosion and sedimentation immediately after treatment. These impacts would be minimized through implementation of management actions that would provide mitigation during the treatment process. Changes in grazing management in riparian areas and restoration of vegetation resilience in nearby riparian and upland areas would improve habitat conditions over the long term. By implementing the various management actions associated with the wildlife and fisheries management direction and mitigation actions associated with other programs, the goal and objective for fisheries would be achieved.

There would be a loss of wildlife habitat on less than 5 percent of the planning area. Direct loss of habitat would occur as a result of land disposals and construction activities associated with energy production and mineral development. Indirect losses would occur through fragmentation of habitat and avoidance of areas adjacent to project sites during construction and operation activities. Mitigation of discretionary permitted activities that result in losses of aquatic habitat and priority wildlife habitat would occur by improving 2 acres of comparable habitat for every 1 acre disturbed as determined on a project-by-project basis.

The quality of wildlife habitat, both aquatic and terrestrial, on the remaining 95 percent of the planning area would improve as a result of wildlife habitat management, wild horse management, livestock grazing management, off-highway vehicle management, vegetation management, watershed management, fire management, and noxious and invasive weed management.

Over the long term, the Proposed RMP would achieve the goal for the fish and wildlife management program. Because of the time required to implement the necessary vegetation treatments and other management actions, achievement of the goal for the entire area in the short term may not occur in the first few years. Site-specific locations may achieve the goals sooner due to the prioritization of treatments.

Alternative A

Impacts from Fish and Wildlife Habitat Management Actions.

Parameter – General Wildlife Habitat Management (Aquatic and Terrestrial)

Aquatic habitat quality would be maintained by following Resource Advisory Council standards and guidelines that protect riparian vegetation, bank stability, and channel morphology (Appendix B). No management action involving mitigation on a 2 to 1 ratio for aquatic habitat disturbance would be part of this alternative resulting in the potential for greater effects from disturbance compared to the Proposed RMP.

Implementation of this alternative would include restoration activities that would be managed to achieve desired range of conditions for vegetation communities (see Section 2.5.5, Vegetation). The historic restoration rate of approximately 10,000 acres per year is not considered an adequate rate of habitat restoration to achieve the desired future conditions throughout the planning area. Potential wildlife conflicts would continue to result in long-term landscape level effects from increased habitat degradation and fragmentation, and a reduction in ecological health and vegetation resiliency.

Parameter – Elk, Mule Deer, Pronghorn Antelope, and Rocky Mountain Bighorn Sheep Habitat

Alternative A would promote more suitable habitat conditions for various big game species (elk, mule deer, pronghorn) within the Great Basin ecological system. However, as compared to the Proposed RMP, watershed level effects would continue to result in the reduction in available forage, cover, and overall suitability of shrubland habitats for wildlife species in the long term. On a landscape scale, shrubland habitats would continue to exhibit a reduction in overall habitat quality, ecological health, and vegetation resiliency in the long term.

Management of Rocky Mountain bighorn sheep habitat would be similar to the Proposed RMP, except that no areas would be unavailable for domestic sheep and goat grazing. Restoration and management activities within seasonal habitats would occur only at a small-scale (i.e., allotment, project, or portion of a watershed). As a result, landscape level effects to bighorn sheep habitat would continue to occur from habitat degradation and fragmentation effects associated with restrictive barriers that limit migration between seasonal habitats and other populations. However, habitat quality for this species would likely be improved through the adherence to current policies for management of domestic sheep and goats in native wild sheep habitats.

Parameter – Desert Bighorn Sheep Habitat

Within Mojave Desert mountain and desert scrub habitats, restoration and management activities within seasonal habitats would occur only at a small-scale (i.e., allotment, project, or portion of a watershed). As a result, landscape level effects to bighorn sheep habitat would continue to occur from habitat degradation and fragmentation effects associated with restrictive barriers that limit migration between seasonal habitats and other populations. However, habitat quality for this species likely would be improved through the adherence to current policies for management of domestic sheep and goats in native wild sheep habitats.

Parameter – Migratory Bird Habitat

Under current management direction, best management practices (Appendix F, Section 3) provide measures that would reduce potential impacts to migratory bird species resulting from management programs (e.g., grazing, recreation, and mineral and energy development). In addition, vegetation management would consider the biological needs of migratory bird species as they pertain to specific habitat communities (e.g., sagebrush, pinyon-juniper, riparian) in order to identify appropriate mosaics for the restoration and conservation of migratory bird habitat on a case-by-case basis. Habitat goals for migratory bird species would be consistent with the desired range of conditions for vegetation communities (see Section 2.5.5, Vegetation). Measures to protect breeding migratory birds would include blanket restrictions on surface disturbing activities and implementation of breeding bird surveys as outlined in Ely Field Office policy. No long term management actions or projects to promote or restore habitat quality for migratory birds would be implemented under Alternative A. As a result, long-term, landscape level habitat degradation and fragmentation, and reduction in ecological health and vegetation resiliency would continue to affect migratory birds and wildlife in general.

Parameter – Wildlife Water Developments
Artificial water developments could potentially cause some species (e.g., elk and pronghorn) to expand their distributions into previously unoccupied ranges. Potential wildlife conflicts from localized water developments would result in population expansion of some wildlife species, changes in species composition, and increased competition for available habitat resources (e.g., forage and cover).

Impacts from Other Programs. Effects to terrestrial wildlife associated with water resources, forest/woodland and other plant products, and noxious and invasive weed management would be the same as described for the Proposed RMP. Other effects from interacting programs are described below.

Vegetation. Vegetation treatments conducted on the planning area from 1990 through 2003 mainly involved fire rehabilitation seeding and limited mechanical and prescribed fire treatment on an average of approximately 10,000 acres per year. Vegetation treatments could result in soil disturbance and localized erosion. If the treatment site is located within the drainage area of a perennial stream, sediment could enter the water body during runoff. Any effect on aquatic habitat is expected to be short-term in duration and localized in terms of the affected area. Long-term improvements to aquatic habitat would occur as understory shrubs and grasses recover in the treated area and provide overhanging cover along streams. Seeding is not expected to affect fish species and their habitat. The effects of burning are discussed in this section under fire management.

Treatment and maintenance activities would occur primarily in pinyon-juniper and sagebrush communities although less extensive treatments would occur within each of the Great Basin vegetation types, as compared to the Proposed RMP. Although the effects on wildlife from restoration activities (i.e., removal or thinning of woodland and shrubland) would be similar to those discussed for the Proposed RMP, the levels of treatment within various vegetation communities under Alternative A are not expected to keep up with the ongoing decline of ecological health in these same communities. Vegetation communities would continue to exhibit ongoing habitat transitions (e.g., aspen to conifer and establishment of pinyon and juniper trees in sagebrush shrubland), increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs) in untreated areas. Thus, although localized restoration activities to achieve the desired range of conditions would generally improve habitats for wildlife in localized areas, landscape level effects would continue to result in a reduction in ecological system health and ecological resiliency, and an overall reduction in habitat quality in the long term.

Management of the Mojave Desert ecological system would be similar to the Proposed RMP except that this alternative would focus on maintaining or improving vegetation health and resiliency through management of various uses (e.g., livestock grazing, recreation, and wild horse herds) and the localized treatment of noxious weeds and exotic woody species (e.g., red brome and tamarisk). As a result, the levels of treatment under this alternative are not expected to keep up with the ongoing spread of invasive species. Thus, landscape level effects would continue to result in increased habitat degradation and a reduction in overall habitat quality in the long term.

Wild Horses. Six herd management areas overlap with one or more perennial stream segments containing game fish species. These include Buck and Bald Herd Management Area (Huntington Creek), Cherry Creek Herd Management Area (Goshute Creek and Paris Creek), Butte Herd Management Area (Cherry Creek and Egan Creek), Seaman Herd Management Area (Forest Home Creek), Wilson Creek Herd Management Area (upper Meadow Valley Wash) and the Clover Mountains and Clover Creek herd management areas (Clover Creek). Surface disturbance and loss of vegetation could occur in these areas, especially as horses concentrate near water sources. Horses could directly affect aquatic habitat by disturbing stream substrates and bank vegetation. Fish could be affected due to habitat alteration, removal or reduction of riparian vegetation, and localized increased sediment. The level of impacts is expected to continue at present levels under Alternative A.

Management of wild horses would have the greater effects (e.g., competition for forage, cover, and water resources) on terrestrial wildlife than described under the Proposed RMP since approximately 1.6 million more acres would be managed as wild horse herd management areas.

Lands and Realty. Under Alternative A, possible land acquisitions and disposals would continue to occur for a variety of management purposes. Examples include the Lincoln County land sale and lands subject to the Federal Lands Transaction Facilitation Act (Baca Bill). Potential impacts on aquatic habitat depend on the type of activity proposed for the land. If new surface activities occurred on the land, aquatic habitat could be directly altered or indirectly affected due to increased sedimentation and contamination in runoff. Permit requirements under the Clean Water Act would minimize potential impacts to perennial streams by implementing erosion control, storm water runoff, discharge, and spill control measures. Land activities could require the use of water from a perennial stream, which could reduce the amount of habitat available for aquatic species. The magnitude of the impact would depend upon the volume of water withdrawn.

Under this alternative, approximately 31,900 acres of land would be available for possible land disposal. Potential land disposals would be more limited than the Proposed RMP and, thus, would have less impact on wildlife. Utility right-of-way management would result in the same general effects to wildlife as described for the Proposed RMP. Development of newly proposed utility projects and communication sites would be evaluated for effects on wildlife and its habitat, on a case-by-case basis, in accordance with NEPA. Requirements that would reduce potential impacts to wildlife are presented in Appendix N of the Draft Ely RMP/EIS (July 2005). Conflicts with land use authorization would be expected to result in the long-term reduction of wildlife habitat and increased effects from habitat fragmentation. Development of new land use authorization facilities would be evaluated for effects on wildlife, in accordance with NEPA.

Renewable Energy. The development of wind or solar energy resources or utility rights-of-way would result in surface disturbance during facility construction and access to the sites. If the facilities are located in perennial drainages containing aquatic species, increased sedimentation could affect their habitat.

Under Alternative A, applications for solar or wind energy projects would be reviewed by the Ely Field Office on a case-by-case basis. The types of potential conflicts with wildlife and their habitats would be the same as discussed for the Proposed RMP. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS.

Travel Management and Off-highway Vehicle Use. Use of existing travel routes could result in short-term, localized sediment input to perennial stream segments containing fish species. The primary mechanism for sediment effects would involve off-highway vehicle use adjacent to or within stream channels. Soil disturbance from vehicle use could result in sediment runoff from roads into adjacent streams or springs. Impacts are expected to continue at present levels or increase under Alternative A, depending on where off-highway vehicle use increases.

Terrestrial wildlife habitat would not be enhanced, and may even deteriorate, since approximately 9.8 million acres would remain open to off-highway vehicle use. Impacts to wildlife from increased noise and human presence would be much more widespread and potentially much more disruptive, as compared to the other alternatives. Development of new trails by off-highway vehicle use within these open areas would result in increased habitat degradation and fragmentation.

Recreation. As a result of the planning area being generally open to recreational off-highway vehicle use, impacts to wildlife from noise and human presence would be much more widespread and potentially much more disruptive, as compared to the other alternatives. Organized race events would continue under the current permitting system and would affect wildlife as described under the Proposed RMP.

Livestock Grazing. Effects to wildlife from livestock grazing would be similar to those described for the Proposed RMP, except that under Alternative A, livestock utilization levels and special use restriction would continue to be implemented through existing framework plans and site-specific activity plans. These utilization levels may limit the availability of key shrubs, forbs, and grasses for wildlife use within some big game habitats (e.g., elk, pronghorn, and mule deer). Current range and livestock management also would continue to limit the availability of herbaceous cover for game birds and other wildlife species in the long term. Effects of livestock grazing on both desert and Rocky Mountain bighorn sheep would be the same as for the Proposed RMP.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres presently are available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP (see Section 4.18). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Impacts to wildlife from mineral development activities would be the same as for the Proposed RMP, except that the Proposed RMP would have additional areas of closure, oil-and-gas stipulations, and best management practices to better protect wildlife and wildlife habitat.

Mining for metals would not be expected to affect fish habitat or fish species in the planning area. This conclusion is based on a comparison of high potential occurrence of metals to fishable stream segments. No stream segments are located within the high mineral potential areas.

Effects of mineral development on terrestrial wildlife would be similar to those discussed for the Proposed RMP except that some of the timing and use stipulations associated with the fluid minerals leasing program under the Proposed RMP would be applied only as best management practices under Alternative A. This could result in greater impacts under Alternative A to various raptor species, big game species, and desert bighorn sheep. Project-specific mitigation measures may be required to minimize potential impacts to these species.

Watershed Management. The current approach of watershed management would continue under Alternative A and impacts, with the exception of forage allocation, would be the same as for the Proposed RMP.

Following vegetation treatments, the quantity and quality of forage (i.e., herbaceous vegetation) is expected to increase within treated areas and would provide improved habitat for wildlife in the short term. In the Schell Resource area, the reservation of 30 percent of additional forage for wildlife would continue to provide an incremental increase in available forage for wildlife species. Additional forage within the Egan and Caliente Resource Areas on the planning area would continue to be allocated or reserved proportionately among all users, including wildlife, on a case-by-case basis. Although treated areas would provide additional herbaceous forage and increased habitat quality for wildlife in the short term, landscape level effects would continue to result from habitat degradation and fragmentation, reduction in ecological health, and reduction in vegetation resiliency in the long term.

Fire Management. Under Alternative A, prescribed fire, wildland fire use (approximately 3.6 million acres available) and other tools would not be used to the greatest extent practical as under the Proposed RMP. The impacts under Alternative A would be similar to those under the Proposed RMP except on a smaller scale. This, in the long-term, would result in fewer acres with improved ecological health, vegetation resilience, and overall improved habitat quality. Because fuels would continue to accumulate in untreated areas; the probability of major, uncontrollable, stand-replacing fire events would continue.

Special Designations. Management areas for two existing ACECs (Beaver Dam Slope and Kane Springs) would not overlap with perennial streams and springs. The Mormon Mesa ACEC overlaps with Meadow Valley Wash. However, there are no riparian or other stipulations that would affect habitat for fish species. No new areas would be proposed under Alternative A.

Conclusion. Aquatic species habitat management would focus on sustaining aquatic habitats by following Resource Advisory Council standards and guidelines. Other programs could continue to affect aquatic habitat as a result of sedimentation, vegetation removal, and habitat alteration due to surface disturbance. Upland areas would continue to degrade in terms of vegetation loss and erosion, which would indirectly affect riparian areas along streams and springs. Land and realty actions (e.g., rights-of-way or disposals) could involve subsequent changes in demand for either surface or groundwater resources throughout the planning area with resultant effects to aquatic habitat as a result of flow or water level changes. The long-term degradation of riparian vegetation and increased level of sedimentation from surface disturbance could result in the goal and objective for fisheries not being achieved.

The loss of terrestrial wildlife habitat from various programs would be similar to the Proposed RMP. Improvement in the quality of wildlife habitat would not occur as quickly or to the degree it would under the Proposed RMP because fewer acres of the different vegetation types would be treated. In addition, most of the planning area would remain open to off-highway vehicle use.

This alternative has a low probability of achieving the program goal over the long term.

Alternative B

Impacts from Fish and Wildlife Habitat Management Actions.

Parameter – General Wildlife Habitat Management (Aquatic and Terrestrial)
Effects to aquatic and terrestrial wildlife habitat generally would be the same as described for the Proposed RMP.

Increased riparian community health and resiliency would benefit both riparian dependent species and upland species in the long term by implementing management actions for priority species habitat. However, existing conflicts between wildlife and other resources uses would continue to result in different types and levels of effects to various wildlife species, changes in species composition, and increased competition for available habitat resources during the short term while watershed analyses are being conducted and treatment plans are being implemented.

Adhering to the standards in Manual 1745 and the Memorandum of Understanding between the BLM and the Nevada Department of Wildlife would balance species numbers with available habitat.

The mitigation goal of 2 acres of comparable habitat for each 1 acre of disturbance would increase priority habitat for priority species.

Parameter – Elk, Mule Deer, Pronghorn Antelope, and Rocky Mountain Bighorn Sheep Habitat
Habitat management for mule deer, pronghorn, and elk would be the same as the Proposed RMP. However, in areas where no conflicts occur with shrubland habitat management objectives, habitat would be actively managed to achieve a predominant early-mid phase of the herbaceous state, which would provide increased forage for elk. On a landscape level, restoration and habitat management to achieve desired ranges of vegetation conditions would benefit wildlife within the Great Basin ecological system by reducing habitat degradation and fragmentation, and promoting ecological health and vegetation resiliency.

Implementation of restoration and management actions would promote increased shrub, browse, and forb forage production; improved escape and thermal cover; and improved breeding and seasonal habitats. In addition, removal of conflicting uses (i.e., livestock grazing) in all Rocky Mountain bighorn sheep ranges and migration corridors would improve overall habitat quality and expand the distribution of Rocky Mountain bighorn sheep on the planning area.

Parameter – Desert Bighorn Sheep Habitat
Effects to desert bighorn sheep would be the same as the Proposed RMP except that the overall habitat conditions (e.g., forage and water availability, escape and thermal cover, breeding and seasonal habitats) would be improved from the removal of livestock grazing from all desert bighorn sheep ranges and migration routes, as compared to the Proposed RMP.

Parameter – Migratory Bird Habitat
Habitat management for and expected effects on migratory birds would be the same as the Proposed RMP.

Parameter – Wildlife Water Developments
Because wildlife water development in this alternative would be used primarily to mitigate multiple-use impacts from loss of habitat or loss of natural water sources, it would have little impact to increases in wildlife populations, but would help sustain existing population levels.

Impacts from Other Programs. Impacts to aquatic habitat from most other programs would be the same as described for the Proposed RMP. Livestock grazing could result in different impacts from the Proposed RMP and Alternative A on fisheries and aquatic habitat, as discussed below. Effects to wildlife associated with water resources, vegetation, wild horses, renewable energy, forest/woodland and other plant products, geology and mineral extraction, fire management, and noxious and invasive weed management would be the same as described for the Proposed RMP.

Lands and Realty. Conflicts of terrestrial wildlife habitat with lands and realty would be the same as described for the Proposed RMP, except that approximately 90,600 acres of land would be available for possible land disposal and some utility corridors would be 1 mile wide, thus affecting greater acreage of habitat (see **Table 4.6-1**).

Travel Management and Off-highway Vehicle Use and Recreation. Conflicts with travel management and off-highway vehicle use would be the same as described for the Proposed RMP, except that nine special recreation management areas totaling approximately 2.7 million acres would be designated with four being managed primarily for motorized recreation. Thus, potential impacts to wildlife by noise and human activity in these areas may be greater than under the Proposed RMP.

Livestock Grazing. Under Alternative B, livestock grazing management would be consistent with maintaining and restoring watershed function and health subject to modification associated with potential disposal actions. Intensive management of livestock also would be used as a tool to accomplish restoration on a short- and long-term basis. By removing grazing on approximately 3.8 million acres, erosion and loss of riparian vegetation would be reduced in numerous drainages. This management approach could improve habitat conditions for fish by increasing vegetation development in riparian areas. Livestock utilization levels and special use restrictions would be enacted as baseline management for the established nonnative fisheries in the planning areas. The objective would be to identify if current livestock management is a causal factor for non-attainment of standards. Corrective actions to livestock management or exclusion of livestock use in watersheds would occur until management objectives are met.

Effects to wildlife from livestock grazing would be similar to those described for the Proposed RMP, except that there would be approximately 3.6 million fewer acres throughout the planning area that would be available for livestock grazing resulting from closure of desert tortoise habitat, bighorn sheep habitat, and some additional ACECs. Under this alternative, domestic livestock would be eliminated in approximately 3 million acres of occupied and historic Rocky Mountain and desert bighorn sheep ranges. These potential closures are shown on **Map 2.6.16-1.** As a result, conflicts between bighorn sheep and livestock within occupied and historic ranges would be greatly reduced and increased herbaceous forage and water availability would result in the short term (less than 5 years). These changes would result in improved habitat quality, expansion of bighorn populations into unoccupied ranges, and improved overall health of bighorn sheep populations in the long term.

Watershed Management. Effects to wildlife from watershed management would be similar to those effects described for the Proposed RMP, except that implementation of Alternative B would provide increased available forage and water for wildlife species in the long term.

Conclusion. Aquatic habitat management would result in maintenance and enhancement of habitat parameters involving riparian vegetation. Most of the same programs discussed in the Proposed RMP and Alternative A also could affect aquatic species habitat as a result of sedimentation, vegetation removal, or habitat alteration. Vegetation management would result in greater short-term impacts through erosion and vegetation removal as a result of increased treatment areas. On a long-term basis, these habitats would be improved from current conditions along with the improvement of vegetation resilience and ecological health in the nearby riparian and upland areas. Fish habitat could be improved in Meadow Valley Wash and Clover Creek due to the ACEC designations and elimination of wild horses, respectively. By implementing the various management actions associated with the wildlife and fisheries management direction and mitigation actions associated with other programs, the goal and objective for fisheries would be achieved.

Fewer acres of terrestrial wildlife habitat would be lost under Alternative B because fewer acres of public land would be disposed of in the planning area. Improvement in the quality of wildlife habitat would be greater than under the Proposed RMP because an additional 3.6 million acres would be unavailable livestock grazing. Wildlife habitat also would improve because the additional forage created as a result of restoration actions would not be allocated to livestock or wild horses, but reserved for watershed maintenance and wildlife.

Overall, Alternative B would achieve the program goal.

Alternative C

Impacts from Fish and Wildlife Habitat Management Actions.

Parameter – General Wildlife Habitat Management (Aquatic and Terrestrial)
Aquatic habitat fisheries habitat management activities would be similar to Alternative A. No management action involving mitigation on a 2 to 1 ratio for aquatic habitat disturbance would be part of this alternative.

Management direction in Alternative C would emphasize increased elk populations and expansion of their distribution on the planning area. Potential wildlife conflicts would include landscape level effects from a reduction of shrubland and woodland habitats, habitat degradation and fragmentation, and, in untreated areas, a continued reduction in ecological health and vegetation resiliency. Improvement in vegetation resiliency and watershed conditions in treated areas would be beneficial to numerous wildlife species, although a few other species may be adversely affected by these changes.

Parameter – Elk, Mule Deer, Pronghorn Antelope, and Rocky Mountain Bighorn Sheep Habitat
Under Alternative C, big game habitats would be managed in concert with commodity production objectives to create a predominantly early phase of the herbaceous state across the landscape which would benefit various wildlife species such as elk. On a watershed basis, implementation of restoration activities and management actions would result in the reduction of shrub and browse forage, decreased escape and thermal cover, and a reduction in breeding and seasonal habitats for shrub-dependent wildlife including mule deer. In areas where no conflicts would occur with livestock or commodity oriented objectives, mule deer and pronghorn habitat would be actively managed. On a landscape scale, these changes would result in continued reduction in habitat quality for some wildlife species associated with dense sagebrush stands, while improving ecological health, vegetation resiliency, and habitat quality for other wildlife species on treated areas in the long term.

Implementation of restoration and management actions would promote increased shrub, browse, and forb production; escape and thermal cover; and improved breeding and seasonal habitats for Rocky Mountain bighorn sheep within the desired range of conditions. Overall habitat quality for this species also would be improved through the adherence of current policies for management of domestic sheep and goats in native wild sheep habitats. Based on these guidelines, additional removal of sheep and goat grazing may occur in the future within and near bighorn sheep habitat as changes in grazing permits are considered.

Parameter – Desert Bighorn Sheep Habitat
Within Mojave Desert mountain and desert scrub habitats, management of desert bighorn sheep would be similar to Alternative A. As a result, long-term degradation of desert bighorn sheep habitat would continue to occur. Restrictive barriers that limit migration between seasonal habitats and other populations would remain. However, habitat quality for this species would likely be improved through the adherence to current policies for management of domestic sheep and goats in native wild sheep habitats.

Parameter – Migratory Bird Habitat
Habitat management for and expected effects on migratory birds would be the same as described for the Proposed RMP.

Parameter – Wildlife Water Developments
Wildlife conflicts from localized water developments would be similar to those identified for Alternative A, except that the severity of impacts on wildlife would be greater under this alternative. Water developments would result in increased population expansion of some wildlife species and increased competition for habitat resources (e.g., forage and cover).

Impacts from Other Programs. Impacts to aquatic habitat and fish species associated with water resources, renewable energy, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, and noxious and invasive weed management activities would be the same as described for Alternative A. The effects associated with wild horses, lands and realty, travel management and off-highway vehicle use and special designations management activities would be the same as described for the Proposed RMP. Terrestrial wildlife effects associated with wild horses, renewable energy, forest/woodland and other plant products, geology and mineral extraction, and noxious and invasive weed management would be similar to those described for the Proposed RMP. The following interrelated programs would result in different effects as compared to Alternative A and the Proposed RMP.

Vegetation. Vegetation treatments under Alternative C would focus on somewhat greater total acreage to be treated than under the Proposed RMP, but the goals of treatment and management would focus treatments on the creation of vegetation communities that are more productive for commodity interests such as livestock and elk forage. This increased level of treatment could result in a potentially higher level of erosion during the short term throughout the planning area than under Alternative A. The increased level of treatment also could affect additional riparian vegetation. A wider area of riparian vegetation could be treated as part of the restoration under Alternative C, which would be beneficial to aquatic habitat. Under this alternative, restoration treatments would maximize herbaceous vegetation states and limit the amount of mature woodland and shrub states, as compared to other alternatives. Thus, achievement of successful restoration would generally benefit a somewhat different set of wildlife species under this alternative than under the Proposed RMP. Like the Proposed RMP, treatments would occur across all vegetation types, but the greatest area of treatments would occur in sagebrush and pinyon-juniper communities with limited applications in other communities where current conditions are not within the desired ranges of vegetation conditions.

Impacts to terrestrial wildlife from the vegetation management under Alternative C would include the short-term reduction in forage and ground cover on each treatment area until the desirable perennial species recover or become established, and the long-term conversion from dense shrub and woodland communities to open, herbaceous-dominated communities on much of the area to be treated. While this conversion would favor some wildlife species (e.g., elk and grassland birds) by creating a greater amount of herbaceous forage, a reduction of more mature and dense shrub vegetation would result in the long-term reduction of breeding and seasonal habitats for shrubland-dependent species. On a landscape scale, habitats would exhibit a reduction in overall habitat quality for numerous wildlife species in the long term.

Lands and Realty. Wildlife conflicts from possible disposal of lands would be the same as described for the Proposed RMP except that a substantially greater area would be available for possible disposal (up to approximately 295,200 acres). Utility right-of-way management would result in the same general effects to wildlife as described under the Proposed RMP, except that existing designated corridors would be increased to 3 miles in width, potentially resulting in greater fragmentation effects. Potential wildlife conflicts with the development of communications sites would be the same as described for the Proposed RMP.

Land use authorization facilities would likely result in increased habitat degradation and fragmentation effects on wildlife habitats in the long term. Development of new land use authorization facilities would be evaluated for effects on wildlife, in accordance with NEPA. Standard operating procedures that would reduce potential impacts to wildlife are present in Appendix N of the Draft Ely RMP/EIS (July 2005).

Travel Management and Off-highway Vehicle Use and Recreation. Recreation activities under Alternative C could result in increased use within the additional special recreation management areas (2.6 million acres total). However, the management approach would be to minimize effects to water bodies and wildlife habitat located within the recreation areas. Impacts from travel management and off-highway vehicle use and recreation would be similar to those for the Proposed RMP.

Livestock Grazing. Effects to wildlife from livestock grazing would be similar to those described for the Proposed RMP, except that the closure of grazing on approximately 6,400 acres of newly designated ACECs would benefit wildlife by providing additional forage and water for wildlife species.

Watershed Management. The impact of watershed management actions on aquatic and terrestrial wildlife would be to allocate additional forage produced to livestock ahead of wildlife.

Fire Management. Because Alternative C involves minimal use of prescribed burns and full suppression of wildland fires, accumulation of heavy fuels would continue throughout the untreated areas of woodland and shrub communities. The increased fuel loading from full fire suppression on the planning area would eventually lead to large fire events in untreated areas. Thus, there would likely be a higher frequency of intense fires when these dense woodlands or shrublands finally burn. Erosion and sedimentation impact to streams would be greater in such areas. Another result would be greater long-term habitat effects to wildlife species than discussed for the Proposed RMP, Alternative A, or Alternative B.

Conclusion. In general, management actions would allow greater intensity of development, which would result in higher potential for sedimentation impacts on aquatic habitat. Increased sedimentation could affect aquatic habitat in the short term as a result of vegetation treatments and in the long term as a result of fire management. Watershed management could result in long-term improved habitat conditions in treated areas with an emphasis on recreation. Stream habitats in untreated areas would be jeopardized by increased risk of intense wildland fires. The potential for increased level of sedimentation from surface disturbance could result in the goal and objective for fisheries not being achieved in some drainages that support fisheries.

Alternative C would have similar direct impacts to the quantity and quality of wildlife habitat from fish and wildlife management actions as the Proposed RMP, but impacts from other programs, particularly fire management, would differ substantially. Thus, on a long-term basis, Alternative C would probably fail to achieve the program goal.

Alternative D

Impacts from Fish and Wildlife Habitat Management Actions.

Parameter – General Wildlife Habitat Management (Aquatic and Terrestrial)
Under Alternative D, management direction would be to allow natural processes to restore game and nongame fisheries. The effects of reduced recreational fishing to local economies would be considered minimal.

Implementation of Alternative D would result in the continuation of current habitat transitions (e.g., conifer invasion of aspen stands and establishment of pinyon and juniper trees in sagebrush shrubland), increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs). The increased woody fuel accumulation and woody species competition with herbaceous vegetation would cause some untreated plant communities to cross ecological thresholds. Eventually, these untreated communities would burn, resulting in hotter fires that would cause soil to be more susceptible to accelerated erosion and establishment of invasive species. These habitat changes would result in a reduction of herbaceous forage, community structure, and overall suitability of habitats for wildlife species. Increased displacement of big game by fires would affect vegetation and wild horses in adjacent areas. Localized restoration activities following fires would improve habitat conditions for wildlife species. On a landscape level, changes would continue to result in habitat degradation, reduction in ecological health and resiliency, and reduction in overall biological diversity, largely as a result of increasing numbers of large-scale fires and spread of invasive species.

Parameter – Elk, Mule Deer, Pronghorn Antelope, and Rocky Mountain Bighorn Sheep Habitat
Big game within the Great Basin ecological system (elk, mule deer, pronghorn) would benefit from the exclusion of discretionary uses (e.g., livestock grazing) of public lands. Natural processes would be allowed to function and dictate the mosiacs of wildlife habitats on a landscape scale. Under Alternative D, habitats for big game species would not be actively managed to increase species distribution or densities beyond what natural habitats and water sources would support. Active restoration would only occur where human-induced alterations have modified the natural environment. Following the exclusion of discretionary uses of public lands, all available forage would be made available for watershed maintenance, wildlife, and wild horses. However, as discussed above, because this alternative would emphasize passive restoration with limited active habitat management, implementation of this alternative would result in the continuation of natural habitat transitions (e.g., conifer invasion of aspen stands and establishment of pinyon and juniper trees in sagebrush shrubland), increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs). Although localized restoration activities would improve habitat conditions for wildlife species, landscape level changes would continue to result in habitat

degradation, reduction in ecological health and resiliency, and reduction in overall biological diversity largely as a result of increasing numbers of large-scale fires and spread of invasive species.

Management of historic Rocky Mountain bighorn sheep habitats would have the same general effects as discussed in Alternative A, except that active habitat restoration would be emphasized only in areas affected by wildland fires or where invasive species dominate.

Parameter – Desert Bighorn Sheep Habitat
Desert bighorn sheep populations and their habitat would be benefited by the removal of conflicting discretionary uses, at least in the short-term. On a long-term basis, however, the passive management of these habitats would eventually lead to substantially increased fire risk and damage resulting in habitat degradation, reduction in ecological health and resiliency, increased spread of invasive species, and reduction in overall biological diversity.

Parameter – Migratory Bird Habitat
Because management of migratory bird habitat would be primarily passive and conflicting discretionary uses would be excluded, it is expected that such habitats would be enhanced, at least in the short-term.

Parameter – Wildlife Water Developments
Under Alternative D, wildlife would benefit from the increased availability of natural surface water from exclusion of discretionary commodity uses of public lands (e.g., livestock grazing). As a result, potential conflicts to wildlife from water developments would be minimal. However, some artificial water developments for livestock would cease to provide water for wildlife as they are abandoned or removed.

Impacts from Other Programs. Impacts to aquatic habitat and fish species associated with water resources, renewable energy, geology and mineral extraction, and noxious and invasive weed management activities would be the same as described for Alternative A. The effects associated with travel management and off-highway vehicle use and watershed management activities would be the same as described for Alternative B. Under Alternative D, effects to terrestrial wildlife associated with invasive and nonnative plant species would be the same as described for Alternative A. The following interrelated programs would result in different effects as compared to the previous alternatives.

Vegetation. Under Alternative D, vegetation treatment areas would be less extensive than other alternatives. This alternative also would result in the avoidance of in-channel manipulations. Therefore, Alternative D would involve less surface disturbance from treatments, and thus, would result in a lower potential erosion input to drainage during the short-term period. Herbicide use also would be constrained under this alternative, which would avoid potential toxicity concerns for fish species.

As a result of the limited approach to restoration with minimal influence from management and resource uses, degraded and fragmented habitats would be left to recover through natural processes. As discussed in Section 4.5, if such recovery occurs at all, it is expected to be very slow in this environment. Habitat management would emphasize habitat treatments of invasive vegetation species. Implementation of this alternative would result in the continuation of ongoing habitat transitions (e.g., conifer invasion of aspen stands and establishment of pinyon and juniper trees in sagebrush shrubland), increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs) in the long term. In the absence of large fires, these habitat changes would result in a reduction of herbaceous forage, community structure, and overall suitability of habitats for wildlife in the long term. However, with the accumulation of fine fuels in sagebrush (due to reduced livestock grazing) and heavy fuels in dense shrub and tree communities, increased large fire events would remove habitat from large areas of woodland and shrubland. Within the dense, overmature stands of sagebrush or pinyon-juniper woodlands, perennial understory species of grasses and forbs are commonly absent. Thus, without costly rehabilitation measures, most of these burned areas would not recover with native perennial herbaceous vegetation. Rather, the freshly burned areas would provide open niches for expansion of nonnative and weedy species including flammable annuals and non-palatable perennials. On a landscape scale, habitats would exhibit a reduction in overall habitat quality, ecological health, and vegetation resiliency in the long term.

Wild Horses. Within the 24 herd management areas, horse populations would be uncontrolled, which would reduce vegetation and contribute erosion to drainages. Five streams (Huntington, Paris, Goshute, Cherry, and Egan creeks) in White Pine County and one stream (Upper Meadow Wash) in Lincoln County occur within several of these herd management areas. As a result, fish habitat could be degraded due to wild horse grazing and physical disturbance.

Conflicts between wildlife and wild horses would be similar to those described for Alternative A, except that wild horse populations within these areas would be uncontrolled, substantially increasing the impacts to wildlife. It is expected that these uncontrolled wild horse populations would destroy the herbaceous forage and ground cover, reduce habitat structure, and diminish overall habitat quality in the long term.

Lands and Realty. Since there would be no net loss of public lands and no new land use authorizations such as rights-of-way under this alternative, fish species and their habitat would not be affected. Effects to terrestrial wildlife and habitats resulting from lands and realty actions also would be minimal.

Renewable Energy. Because there would be no new discretionary land use authorizations for wind or solar energy development under Alternative D, there would be no associated impacts to fish and wildlife.

Travel Management and Off-highway Vehicle Use and Recreation. Aquatic and terrestrial wildlife conflicts with travel management and off-highway vehicle use and recreation would be substantially reduced in this alternative because 11.1 million acres of the planning area would be closed to off-highway vehicle use, and use would be restricted to maintained roads and trails. This would greatly reduce the effects to fish and wildlife by reducing overall habitat degradation and fragmentation as compared to the other alternatives.

Livestock Grazing. No conflicts with livestock management would occur under this alternative since livestock use would not be permitted on the planning area. This aspect of Alternative D would result in higher habitat quality for wildlife, at least in the short term.

Forest/Woodland and Other Plant Products. Fish habitat would not be affected by this program, since there would be no fuelwood collection or other wood product harvests. Effects to terrestrial wildlife and habitats resulting from forest/woodland and other plant products would be minimal since only pinyon pine nut harvesting would be permitted.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario (see Section 4.18). Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Watershed Management. Additional available forage would be reserved for watershed maintenance and wildlife and allocated to wild horses after Standards for Rangeland Health have been met at the watershed level. However, the reduced level of vegetation treatments in this alternative would slow the restoration process for watershed function and enhancement of wildlife habitat.

Fire Management. Implementation of this alternative with minimal fire suppression and limited vegetation treatments would result in wildland fire use events that would have a high likelihood of causing major impacts to shrub cover and woodland habitats in the long term. It also is expected that many of these fires would be large, intense fires burning dense fuel accumulations, resulting in substantial erosion and sedimentation impacts to streams. These impacts would be expected to occur at a large geographic scale with substantial cover losses, especially at lower elevations. Depending on shrub and woodland overstory, recovery rates, fire frequency, and reclamation success, these events could result in short- and long-term impacts. Effects would include diminished habitat productivity and diversity for entire communities of shrubland and woodland wildlife. In the event of unsuccessful fire rehabilitation, these areas could become vast monocultures of herbaceous grasslands dominated by cheatgrass and other invasive species that are of little or no value to wildlife.

Conclusion. Aquatic habitat would not be actively managed, which could involve the elimination of fish populations in some water bodies. Greater impacts to aquatic habitat could occur due to uncontrolled wild horse population increases in herd management areas, increased dispersed recreation, and fire management with minimal fire suppression. Less short-term erosion would occur from vegetation treatment, but in the long term, erosion and sedimentation would be greater due to more intense fires. The goal and objectives for fisheries may not be achieved in some drainages because fish populations could be eliminated in some water bodies and habitat could be degraded on a long-term basis from increased sedimentation.

The amount of terrestrial wildlife habitat lost as a result of lands and realty actions, renewable energy production, and mineral development under Alternative D would be minimal compared to the Proposed RMP. Improvement to wildlife habitat as a result of restoration actions would not occur except through limited fire use and weed treatment. The quality of wildlife habitat would be enhanced under Alternative D, at least in the short-term, because approximately 11.1 million acres would be closed to off-highway vehicle use, and because livestock grazing would be eliminated throughout the entire planning area. Habitat quality would probably deteriorate over the long term due to increased fire effects throughout the planning area.

This alternative would fail to meet the program goal because the habitat management under this alternative is not consistent with the principles of multiple use management and because the habitat quality achieved in the short term would not likely be sustainable over the long term with increasing fire risks.

4.7 Special Status Species

Impact Issues

Impacts to special status species are generally similar and closely related to impacts to other resources such as vegetation, watersheds, wildlife, wild horses, and livestock.

The primary mechanisms by which management activities could affect sensitive aquatic species include habitat alteration or loss, sedimentation due to soil disturbance and vegetation removal, water quality changes, and reductions in surface water quantity. The focus of the analysis for aquatic species was on occupied or designated critical habitat (i.e., perennial streams, springs, and wetlands) with persistent year-round flow or water availability.

The effects analysis for special status wildlife species focused on those species that were identified as potentially occurring within the planning area (see Appendix E, Special Status Species). The primary impact issues to special status wildlife species as they relate to resource conflicts with other management programs include loss or alteration of native habitats, increased expansion of noxious weeds and other exotic weed species, decreased water availability, increased habitat fragmentation, changes in habitat and species composition, and direct loss of individuals. The overlap of various other management programs with key special status species habitats is shown in **Table 4.7-1** to identify the magnitude of potential effects on these habitats. Desired future conditions for each special status wildlife species would continue to be developed as data become available. These desired future conditions would be patterned after those presented for greater sage-grouse and would be consistent with the desired ranges of conditions shown for vegetation in Chapter 2.0. Desired future conditions would be used as a tool to manage special status species wildlife within the planning area.

As stated in Section 3.7.1, a total of 34 special status plants occur or are suspected to occur in the planning area, of which one species, the Ute ladies'-tresses orchid (federally listed as threatened), would be addressed in the Biological Opinion from the U.S. Fish and Wildlife Service. The following impact analyses address potential impacts to this species and potential habitat areas (i.e., vegetation types) as a result of the implementation of the various alternatives, tools and techniques, and resource management programs. Potential impacts to other special status plants (33 species) and their habitats would be addressed in a general fashion.

General threats to sensitive plant populations in the planning area include off-highway vehicle use, illegal collecting, habitat destruction and disturbance associated with resource extraction or utility and road construction, and livestock and wildlife trampling. Fire management, expansion of noxious weeds and exotic plant species, home and resort development, and livestock grazing currently are having substantial effects on native plant communities in portions of the planning area (Provencher et al. 2003). Low reproduction rates and climatic events, such as prolonged drought, also affect the continued viability of the populations (Holland 1998; Morefield 1994; Smith 1994).

Table 4.7-1
Overlap of Management Actions with Key Special Status Species Habitats[1]

Special Status Species Habitat	Proposed RMP Affected Area		Alternative A Affected Area		Alternative B Affected Area		Alternative C Affected Area		Alternative D Affected Area	
	Acres	%[2]	Acres	%[2]	Acres	%[2]	Acres	%[2]	Acres	%[2]
Overlap of Herd Management Areas										
Desert Tortoise Designated Critical Habitat Inside ACECs	0	0	0	0	0	0	0	0	0	0
Desert Tortoise Designated Critical Habitat Outside ACECs	0	0	0	0	0	0	0	0	0	0
Desert Tortoise Non-critical Habitat Outside ACECs	0	0	74,550	16	0	0	0	0	74,550	16
Southwestern Willow Flycatcher Habitat	0	0	157	24	0	0	0	0	157	24
Yellow-billed Cuckoo Habitat	0	0	80	40	0	0	0	0	80	40
Greater Sage-grouse Leks (with 0.25-mile radius)	12,854	39	13,751	42	12,854	39	12,854	39	13,751	42
Greater Sage-grouse Winter Habitat	1,317,402	34	1,727,145	45	1,317,402	34	1,317,402	34	1,727,145	45
Overlap of Proposed Disposals										
Desert Tortoise Designated Critical Habitat Inside ACECs	0	0	0	0	0	0	0	0	0	0
Desert Tortoise Designated Critical Habitat Outside ACECs	15	0	0	0	0	0	0	0	0	0
Desert Tortoise Non-critical Habitat Outside ACECs	4,870	1	1,280	0	2,873	1	15,256	3	1,280	0
Southwestern Willow Flycatcher Habitat	0	0	0	0	0	0	28	4	0	0
Yellow-billed Cuckoo Habitat	0	0	9	2	0	0	9	2	0	0
Greater Sage-grouse Leks (with 0.25-mile radius)	0	0	121	0	126	0	546	2	0	0
Greater Sage-grouse Winter Habitat	8,699	0	24,483	1	23,905	1	83,431	2	7,728	0
Overlap of Designated Corridors										
Desert Tortoise Designated Critical Habitat Inside ACECs	11,079	8	11,097	6	11,968	6	18,517	10	11,097	6
Desert Tortoise Designated Critical Habitat Outside ACECs	10,817	13	8,768	16	10,572	20	13,268	25	8,768	16
Desert Tortoise Non-critical Habitat Outside ACECs	14,823	4	14,288	3	15,111	3	19,317	4	14,288	3
Southwestern Willow Flycatcher Habitat	0	0	0	0	0	0	0	0	0	0
Yellow-billed Cuckoo Habitat	7	2	7	2	7	2	7	2	7	2
Greater Sage-grouse Leks (with 0.25-mile radius)	1,236	4	857	3	1,980	6	7,436	23	857	3
Greater Sage-grouse Winter Habitat	91,501	2	60,041	2	137,693	4	472,237	12	60,041	2
Overlap of Moderate and High Potential Wind Energy Areas										
Desert Tortoise Designated Critical Habitat Inside ACECs	1,188	1	1,188	1	1,188	1	1,188	1	1,188	1
Desert Tortoise Designated Critical Habitat Outside ACECs	119	0	119	0	119	0	119	0	119	0
Desert Tortoise Non-critical Habitat Outside ACECs	2,669	1	2,669	1	2,669	1	2,669	1	2,669	1
Southwestern Willow Flycatcher Habitat	1	0	1	0	1	0	1	0	1	0
Yellow-billed Cuckoo Habitat	1	0	1	0	1	0	1	0	1	0
Greater Sage-grouse Leks (with 0.25-mile radius)	295	1	295	1	295	1	295	1	295	1
Greater Sage-grouse Winter Habitat	51,015	1	51,015	1	51,015	1	51,015	1	51,015	1
Overlap of Moderate and High Potential Solar Energy Areas										
Desert Tortoise Designated Critical Habitat Inside ACECs	135,300	71	139,087	71	139,087	71	139,087	71	139,087	71
Desert Tortoise Designated Critical Habitat Outside ACECs	46,200	86	42,422	86	42,422	86	42,422	86	42,422	86
Desert Tortoise Non-critical Habitat Outside ACECs	303,004	58	303,151	64	303,151	64	303,151	64	303,151	64
Southwestern Willow Flycatcher Habitat	605	93	605	93	605	93	605	93	605	93
Yellow-billed Cuckoo Habitat	347	94	347	94	347	94	347	94	347	94
Greater Sage-grouse Leks (with 0.25-mile radius)	27,097	82	27,097	82	27,097	82	27,097	82	27,097	82
Greater Sage-grouse Winter Habitat	2,930,168	77	2,930,168	77	2,930,168	77	2,930,168	77	2,930,168	77
Overlap of Special Recreation Permit Areas										
Desert Tortoise Designated Critical Habitat Inside ACECs	0	0	0	0	0	0	0	0	0	0
Desert Tortoise Designated Critical Habitat Outside ACECs	0	0	0	0	0	0	0	0	0	0
Desert Tortoise Non-critical Habitat Outside ACECs	0	0	0	0	0	0	0	0	0	0
Southwestern Willow Flycatcher Habitat	0	0	0	0	0	0	0	0	0	0
Yellow-billed Cuckoo Habitat	0	0	0	0	0	0	0	0	0	0
Greater Sage-grouse Leks (with 0.25-mile radius)	2,345	7	0	0	1,671	5	2,345	7	0	0
Greater Sage-grouse Winter Habitat	132,166	3	0	0	101,053	3	132,166	3	0	0
Overlap of Special Recreation Management Areas										
Desert Tortoise Designated Critical Habitat Inside ACECs	0	0	N/A[3]	N/A	0	0	0	0	0	0
Desert Tortoise Designated Critical Habitat Outside ACECs	0	0	N/A[3]	N/A	0	0	0	0	0	0
Desert Tortoise Non-critical Habitat Outside ACECs	27,182	6	N/A[3]	N/A	33,917	7	33,917	7	0	0
Southwestern Willow Flycatcher Habitat	188	29	N/A[3]	N/A	255	39	255	39	0	0
Yellow-billed Cuckoo Habitat	202	54	N/A[3]	N/A	274	74	274	74	0	0
Greater Sage-grouse Leks (with 0.25-mile radius)	3,998	12	N/A[3]	N/A	5,826	18	6,785	21	0	0
Greater Sage-grouse Winter Habitat	314,509	8	N/A[3]	N/A	477,195	12	407,490	11	0	0

Table 4.7-1 (Continued)

	Proposed RMP Affected Area		Alternative A Affected Area		Alternative B Affected Area		Alternative C Affected Area		Alternative D Affected Area	
Special Status Species Habitat	**Acres**	**%[2]**	**Acres**	**%[2]**	**Acres**	**%[2]**	**Acres**	**%[2]**	**Acres**	**%[2]**
Overlap of Designated Wilderness										
Desert Tortoise Designated Critical Habitat Inside ACECs	60,946	31	60,946	31	60,946	31	60,946	31	60,946	31
Desert Tortoise Designated Critical Habitat Outside ACECs	2,111	4	2,111	4	2,111	4	2,111	4	2,111	4
Desert Tortoise Non-critical Habitat Outside ACECs	169,907	36	169,907	36	169,907	36	169,907	36	169,907	36
Southwestern Willow Flycatcher Habitat	4	1	4	1	4	1	4	1	4	1
Yellow-billed Cuckoo Habitat	3	1	3	1	3	1	3	1	3	1
Greater Sage-grouse Leks (with 0.25-mile radius)	1,210	4	1,210	4	1,210	4	1,210	4	1,210	4
Greater Sage-grouse Winter Habitat	74,424	2	74,424	2	74,424	2	74,424	2	74,424	2

[1] Additional types of special status species habitat exist within the decision area but have not been mapped and are not included in this analysis.

[2] Percentage of a given type of a special status species habitat that overlap management actions is based on the amount of that habitat within the decision area.

Desired future conditions for each special status plant species would continue to be developed as data become available.

Assumptions for Analysis

- Site-specific information on special status species would be collected as part of the watershed analysis process, and in support of project implementation.
- Indirect impacts to the Virgin River and Muddy River and those special status species associated with them (i.e., Yuma clapper rail, woundfin, Virgin River chub, and Moapa dace) would be addressed on a case-by-case basis through the NEPA and the Endangered Species Act Section 7 Consultation process.

Interactions with Other Programs

General Impacts from Special Status Species Treatments Tools and Techniques. Treatment tools for special status species are summarized in Appendix G along with the tools used in conjunction with various other resource programs. The following paragraphs provide a general overview of the impacts anticipated from the use of major special status wildlife species treatment tools. Best management practices that would reduce potential impacts to wildlife are presented in Appendix F, Section 1.

Bat gates. Bat gates are commonly installed at the entrance of caves and mines to protect human health and safety as well as important bat habitats and minimize potential impacts to roosting bats.

Water escape ramps. Escape ramps such as ladders or other devices would minimize potential impacts to small mammals and herptiles from becoming trapped in manmade water bodies (e.g., guzzlers).

Temporal Restrictions. In many cases, temporal restriction are used to restrict recreation, development, treatment, and other permitted activities during sensitive breeding and seasonal periods for special status species. Temporal restriction would minimize potential impacts to special status species from direct disturbance of habitat and indirect effects from increased noise and human presence.

Livestock fencing. Livestock fencing is commonly used to control livestock distribution and to exclude livestock from important breeding or seasonal special status species habitats (e.g., riparian zones). Wildlife would generally benefit from the exclusion of livestock and the resultant increased availability of forage and water resources, improved breeding and seasonal habitats, and reduced habitat degradation.

Vegetation Treatments. Vegetation treatments may be applied on either a localized or widespread basis to achieve the desired ranges of vegetation conditions discussed in Section 2.5. These treatments could involve any of the tools identified in Appendix G, individually or in combination. Various types of tools may be applied to modify vegetation conditions in relatively small areas and improve habitat to desired ranges of vegetation conditions. In the short term, localized vegetation treatments would generally benefit special status wildlife species by increasing quantity and quality of herbaceous forage and ground cover, and improve breeding and seasonal habitats for wildlife in the long term.

Telemetry. Radio-telemetry is a common tool used to acquire detailed data on many aspects of wildlife biology, including habitat use, home range size, mortality and survivorship, and migration timing and routes. Since many wildlife species are secretive and difficult to observe, radio-telemetry provides a valuable tool to learn more about a species' life-history.

Interactions with Other Programs

The special status species wildlife management program within the planning area potentially would be affected by actions within the resource management programs for water resources, vegetation, fish and wildlife, wild horses, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, watershed management, fire management, noxious and invasive weed management, and special designations.

Goal

Manage public land to conserve, maintain, and restore special status species populations and their habitats; support the recovery of federally listed threatened and endangered species; and preclude the need to list additional species.

Northeastern Great Basin Resource Advisory Council Standard.

- Habitats exhibit a healthy, productive and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover, and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

- Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria.

Mojave/Southern Great Basin Resource Advisory Council Standard.

- Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

- Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Objective

To manage suitable habitat for special status species in a manner that would benefit these species directly or indirectly and minimize loss of individuals or habitat from permitted activities.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to special status species also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. Mitigation measures were considered within the following impact analysis section in response to anticipated impacts. Additional “proposed mitigation” for special status species is identified in Section 4.29, Proposed Mitigation and Potential Effectiveness. In order to be carried forward as part of the Approved RMP, these “proposed mitigation measures” would have to be incorporated into the final decision documented in the Record of Decision. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Special Status Species Management Actions. Management for special status species on public lands would involve the six parameters discussed in Section 2.4.7, Special Status Species. The overall goal of these parameters is to manage public lands to conserve, maintain, and restore habitat for special status species; support the recovery of federally listed threatened and endangered species; and preclude the need to list additional sensitive species. Direct impacts associated with these management actions are discussed for each of the parameters. In general, all of the management actions would result in beneficial impacts to special status species.

Parameter – Special Status Species Habitat

The objective of this parameter would be to manage suitable habitat for special status species in a manner that would benefit these species directly or indirectly and minimize loss of individuals or habitat from permitted activities. Actions would be prioritized based on the listing status of the species, with federal listing being the highest priority. A number of the management actions would apply to all federally listed species: 1) prioritize conservation, maintenance, and restoration for federally listed and federal candidate species; 2) implement interagency inventory and monitoring programs; 3) participate in interagency recovery implementation teams; 4) strive to mitigate disturbance for permitted activities on a 2-to-1 ratio for all species except desert tortoise; and 5) ensure that habitats for federally listed species are protected, maintained, or restored. Other actions are focused on habitat protection for a particular species or group of species such as Bonneville cutthroat trout and springsnails. The mitigation goal for permitted activities would be 2 acres of comparable habitat for every 1 acre of disturbance on a project-by-project basis. This would apply to all special status fish species and springsnails. As listed in Appendix F, Section 1, numerous best management practices also would avoid or minimize impacts to special status species. In addition, Section 7 compliance would be required for all actions on federal land to protect federally listed species. The following beneficial impacts could result from these management actions: 1) maintain or increase population numbers by implementing recovery and habitat enhancement measures; 2) improve quality and increase quantity of habitat and population numbers as a result of the 2-to-1 mitigation ratio for disturbance to habitat for sensitive species; 3) improve water quality conditions involving turbidity levels by reducing or restricting surface disturbance.

Implementation of the Proposed RMP would establish management criteria through desired future conditions of special status species to promote and restore degraded vegetation communities within the planning area and ensure that special status species are factored into the decision making process during restoration and habitat management actions. Special status species that have been identified as occurring within the planning area are presented in Appendix E, Special Status Species. On a watershed basis, implementation of restoration activities and habitat management would increase available forage and cover, structure, and breeding and seasonal habitats for special status species in the long term. On a landscape level, restoration and habitat management would benefit special status species by reducing habitat degradation and fragmentation, promoting ecological health, and improving vegetation resiliency. Overall, impacts to special status species from restoration activities would include the temporary reduction of forage and cover and the long-term reduction of woody vegetation in the treatment areas.

Under the Proposed RMP, the Ely Field Office Cave Management Plan and the Nevada Bat Conservation Plan would be utilized for guidance on implementation of proactive bat management actions, independent of the watershed analysis, while the size and spatial arrangement of other restoration actions in vegetation communities (e.g., riparian areas and pinyon and juniper woodlands), would consider the habitat needs of obligate bat species. On a watershed level, implementation of this alternative would improve roosting and foraging habitat for bat species. On a landscape level, restoration activities to achieve the desired range of conditions for vegetation communities would benefit sensitive bat species by reducing habitat degradation and fragmentation, and promoting ecological health and vegetation resiliency. Bats would be considered relative to the planned closure of mine shafts, tunnels, or similar features.

The primary impacts to special status plant species from the management direction of this program would be increased awareness of, and protection for, populations of such species. Additional inventory and monitoring programs would be designed to identify and monitor populations of special status plant species within the planning area. These programs would help protect such species from impacts associated with other resource uses.

Management actions that would be implemented to maintain, protect, or restore habitat for particular special status species are discussed below. Except where noted, these management actions would apply to implementation of all other programs within the planning area. These management actions would provide beneficial impacts to special status species.

Parameter – Great Basin Riparian Habitat

Pahrump Poolfish. Habitat for this species would be protected by managing the refugium at Shoshone Ponds in accordance with the recovery plan. Surface disturbance and sediment input to the ponds would be minimized by expanding the fenced area around the ponds to exclude grazing and vehicle use. Management of the area around the ponds would focus on enhancing vegetation cover and reducing runoff and sedimentation into the ponds, thereby improving water quality. Additional habitat for the species also would be created by adding additional ponds at the Shoshone Ponds area.

Big Spring Spinedace, White River Spinedace, and Railroad Valley Springfish. Habitat for these species would be protected by implementing actions and strategies on public lands in accordance with recovery plans for these species. Recovery efforts would include protection of existing occupied habitat for Big Spring spinedace in Condor Canyon, White River spinedace in Ash Springs, and Railroad Valley springfish in six springs in the Railroad Valley. Beneficial impacts of these measures would be maintaining or increasing population sizes by improvements in water quality, water quantity, or habitat conditions. Public information programs also would be used to educate the public on recovery efforts and actions that could adversely affect the species. Discussions or working groups would be established with private landowners to identify measures that could be implemented to maintain or improve habitat quality and population sizes.

Bald Eagle. Protection of bald eagle would continue to occur through the implementation of management actions and coordination with state and federal agencies regarding management of suitable roosting and foraging habitat. See Section 4.5, Vegetation Resources, for impacts from management of riparian vegetation for the bald eagle. This species also would benefit from management actions to mitigate habitat disturbance from discretionary permitted activities on a 2:1 ratio, although this would have limited application since the majority of roosting and foraging habitat within the planning area occurs on non-BLM-administered lands.

Parameter – Mojave Desert and Great Basin Riparian Habitats

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. Southwestern willow flycatcher habitat would be managed by implementing actions and strategies identified in the Recovery Plan for the Southwestern Willow Flycatcher. Implementation of the actions and strategies from this recovery plan primarily would be applicable to potential habitats in Meadow Valley Wash and the Clover Creek drainage. Numerous elements of the recovery plan also would benefit the yellow-billed cuckoo in similar habitats. See Section 4.5, Vegetation Resources, for impacts from management of riparian vegetation for both species.

Both species would benefit in the long-term from management actions to mitigate habitat disturbance from discretionary permitted activities on a 2:1 ratio. Limiting livestock grazing in Clover Creek and Lower Meadow Valley Wash through terms and conditions and/or season-of-use restrictions would benefit both species in the long-term.

Ute Ladies'-tresses. Although the known habitat for this species within the planning area occurs on private land near Panaca Spring, the species would be benefited through additional interagency effort to inventory and survey areas of similar habitat on BLM-administered lands within the vicinity of the known occurrence. If such surveys result in the identification of additional populations, appropriate conservation and recovery actions would be implemented.

Other Sensitive Species on BLM-administered Land. Designation of the Lower Meadow Valley Wash ACEC and management restrictions on conflicting uses would result in increased channel stability, increased riparian vegetation, and improved habitat for a variety of additional riparian special status species (e.g., Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace and Arizona southwestern toad). On a landscape level, restoration activities to achieve desired range of conditions for vegetation communities would benefit special status wildlife species by reducing habitat degradation and fragmentation, and promoting ecological health and vegetation resiliency.

Parameter – Mojave Desert Riparian Habitat

White River Springfish. Habitat in Ash Springs would be managed by implementing actions and strategies identified in the Recovery Plan for the Aquatic and Riparian Species of Pahranagat Valley and the Ash Springs Coordinated Management Plan (U.S. Fish and Wildlife Service 1998a). These conservation efforts include the development of a county-wide habitat conservation plan and discussions with private landowners to identify recovery needs for the species. Mitigation and monitoring would be implemented for Ash Springs. Beneficial impacts that would result from these efforts would include maintaining or increasing population sizes by improvements in water quality, water levels, or habitat conditions.

Hiko White River Springfish. Habitat in Hiko Spring and Crystal Spring would be managed by implementing actions and strategies identified in the Recovery Plan for the Aquatic and Riparian Species of Pahranagat Valley. The conservation efforts involve the establishment of a population at the Blue Link Spring, population monitoring, development and enhancement of habitat in Pahranagat Valley, and discussions with landowners to develop conservation agreements. Beneficial impacts that would result from these efforts would include maintaining or increasing the population size of Hiko White River springfish at existing or new sites. Habitat quality also would be improved through enhancement efforts, which likely would result in stable or increased population sizes.

Pahranagat Roundtail Chub. Habitat in Pahranagat Creek would be managed by implementing actions and strategies identified in the Recovery Plan for the Aquatic and Riparian Species of Pahranagat Valley. Conservation efforts are the same as discussed for the Hiko White River springfish. A new refugium was established in the Key Pittman Wildlife Management Area in 2004. Impacts from these measures would be maintaining or increasing the population size of the Pahranagat roundtail chub.

Parameter – Mojave Desert Scrub Habitat

Desert Tortoise. Protection of desert tortoise would continue to occur through the implementation of management actions, and coordination with state and federal agencies, and desert tortoise working groups. In the short term this would reduce the injury/mortality of individuals and in the long-term this would encourage upward tortoise population trends over the life of the plan.

Habitat for this species would be improved through management actions to attain the desired range of habitat conditions within the Mojave Desert Vegetation (see Section 2.4.5, Vegetation Resources). Implementation of the Proposed RMP would increase herbaceous forage, cover, and shrub structure for special status wildlife species (e.g., desert tortoise, banded gila monster) in the Mojave Desert ecological system. Within desert scrub habitats of the Mojave Desert ecological system, livestock grazing would be excluded from the desert tortoise ACECs and managed with special use restrictions within non-ACEC desert tortoise habitats. On a watershed level, special status species in the Mojave Desert ecological system would continue to benefit from the exclusion of livestock grazing within designated desert tortoise ACECs and special use restrictions that have been developed for desert tortoise habitat outside the ACECs. This management direction would provide higher quality forage (i.e., grasses and forbs) and cover within these areas. On a landscape level, restoration activities to achieve desired range of conditions for vegetation communities would reduce habitat degradation and fragmentation, and promote ecological health and vegetation resiliency. Additional restoration and management actions and mitigation measures to protect or enhance habitats would be evaluated during the watershed analysis and habitat analyses.

Parameter – Mojave and Great Basin Desert Scrub and Salt Desert Shrub Habitats

Implementation of restoration activities to achieve appropriate ranges of vegetation conditions within desert scrub and salt desert shrub habitats would reduce habitat degradation and fragmentation, and promote ecological health and resiliency, in the long term. However short-term effects would continue to result in habitat degradation and fragmentation within suitable breeding burrowing owl habitat until habitat assessments have been completed and restoration objectives have been achieved.

Designation of the White River Valley ACEC would provide additional protection for several rare plant species including the Sunnyside green gentian.

Parameter – Great Basin Sagebrush Habitat

Under the Proposed RMP, restoration and habitat management within sagebrush habitats to achieve desired future conditions for greater sage-grouse would increase herbaceous forage, cover, and shrub structure for sagebrush-dependent special status species (e.g., greater sage-grouse and pygmy rabbit). On a landscape level, restoration activities to achieve appropriate ranges of vegetation conditions would reduce habitat degradation and fragmentation, and promote ecological health and resiliency. The Ely Field Office proposes to use greater sage-grouse habitat needs as a model or "umbrella species" when managing sagebrush wildlife species with sagebrush and sagebrush/woodlands as their primary habitat (Wisdom et al. 2005a). By using greater sage-grouse habitat requirements as a model for sagebrush management, species more strongly associated with intermingled habitat types (e.g., burrowing owls in salt desert shrub habitat) may be provided fewer benefits. Additionally, almost 50 percent of high risk habitats of sagebrush obligates such as sage sparrow and sage thrasher are outside the current geographic range of greater sage-grouse (Wisdom et al. 2005b). However, the use of greater sage-grouse as a model or umbrella species for other fauna of the sagebrush ecological system would increase efficiency in designing restoration treatments at the watershed scale (Marcot et al. 1994; Andelman and Fagan 2000; Andelman et al. 2001; Roberge and Angelstam 2004).

By using greater sage-grouse as an umbrella species at the watershed scale, performing burrowing owl habitat condition assessments in salt desert shrub communities throughout the planning area, and assessing other BLM Nevada sensitive species at the site-specific scale to refine restoration actions in consideration of their needs, ample consideration and protection for all species within the sagebrush biome would occur as part of an efficient multi-species management approach.

Impacts from Other Programs. This section describes the effects of the Proposed RMP on special status species. In total, 19 programs were considered in the analysis of the Proposed RMP. Based on activities for each program, it was concluded that the management actions for nine of these programs (air resources, water resources, soil resources, fish and wildlife, cultural resources, paleontological resources, visual resources, forest/woodland and other plant products, and watershed management) would not affect any of the special status species. Potential effects of all other programs on special status species are discussed below.

Vegetation Resources.

Vegetation treatments would be applied in both upland and riparian areas to achieve the desired ranges of conditions outlined in Section 2.4.5, Vegetation Resources. Depending on the specific situation, treatments could include herbicide application, mechanical methods such as chipping, sawing, mowing, or mulching and prescribed fire. Mechanical methods may involve the use of heavy equipment, off-highway vehicles, hand tools, broadcast seeding, and planting of live vegetation. See the discussion of tools and techniques in Appendix G.

Fish Species

Managing for desired range of conditions in the upland areas applies to all fish species as outlined in Section 2.4.5, Vegetation Resources. Vegetation treatments to achieve these desired ranges of conditions could occur in the upland areas and riparian vegetation communities. As discussed in Section 2.4.5, these management actions would protect, maintain, and restore riparian vegetation, which would help stabilize the stream banks and reduce erosion.

These activities could result in short-term surface disturbance and potential erosion in down-gradient areas. In the long term, vegetation treatments would be expected to reduce soil erosion. Chemicals used in the uplands are not expected to reach streams or other water bodies due to the distances between these habitats and the areas where the treatments would occur.

Pahrump Poolfish. Adjacent upland areas contain pinyon-juniper and sagebrush in the Great Basin ecological system. Vegetation immediately surrounding the Shoshone Ponds includes swamp cedar (Rocky Mountain juniper). No vegetation treatment would occur in the swamp cedar area.

Big Spring Spinedace. Adjacent upland areas contain pinyon-juniper vegetation in the Great Basin ecological system. Riparian vegetation along Condor Canyon (Upper Meadow Valley Wash) consists of box elders, willows, and tamarisks. Management actions involving removal of tamarisk are discussed in Section 2.4.17, Noxious and Invasive Weed Management.

White River Springfish. Upland vegetation consists of black brush and creosotebush within the Mohave Desert. Riparian vegetation surrounding Ash Springs consists of willows and cottonwood trees. No vegetation treatment would occur in the riparian area surrounding Ash Springs.

Hiko White River Springfish and Pahranagat Roundtail Chub. No vegetation treatments would occur on land immediately adjacent to Hiko Springs, Crystal Springs, or Pahranagat Ditch, since they are located on private land. Upland vegetation consists of black brush and creosotebush within the Mohave Desert. The closest BLM-administered land is located approximately 0.08 mile (400 to 500 feet) from these areas.

White River Spinedace. No vegetation treatments would occur on land immediately adjacent to Flag Springs and Sunnyside Creek, since they are located on private land. Upland vegetation consists of sagebrush and salt desert shrub. The closest BLM-administered land is approximately 264 feet from the springs.

Railroad Valley Springfish. No vegetation treatments would occur on land immediately surrounding springs occupied by Railroad Valley springfish, since they are located on private (tribal) land. Upland vegetation consists of sagebrush and salt desert shrub. The closest BLM-administered land is located approximately 0.08 to 0.2 mile (422 to 1,056 feet) from the springs.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. Vegetation management and treatments in riparian communities would emphasize protection, maintenance, and restoration of riparian habitat. As discussed in Section 2.4.5, these management actions would help stabilize the stream banks and reduce erosion.

Vegetation management activities could result in short-term surface disturbance of riparian vegetation communities. Indirect impacts to the Southwestern willow flycatcher and yellow-billed cuckoo on BLM-administered lands would result from the incremental short term loss of nesting and foraging habitat and from increased noise and human presence. Potential direct and indirect impacts to these species from site-specific restoration and maintenance activities would be minimized through implementation of management actions, and application of BLM best management practices.

In the long term, vegetation management actions would be expected to improve riparian habitats for these species. Beneficial effects from these actions within riparian/wetlands habitats in the planning area would include long term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved nesting and foraging habitat, and potential increases in species distribution.

Bald Eagle. Throughout the planning area, upland vegetation would be managed for the desired ranges of conditions outlined in Section 2.4.5, Vegetation Resources. These desired ranges of conditions would be achieved through integrated treatments which may include a wide array of tools and techniques. See discussion of tools and techniques in Appendix G. Management of riparian areas would focus on stabilizing streams and protecting, maintaining, and restoring riparian habitats.

The vegetation treatments may result in short-term (i.e., displacement) and long term (i.e., improved foraging habitat) impacts to bald eagles. Short term impacts (i.e., displacement) would be minimized by conducting activities when eagles are not present. Short-term impacts would result from the incremental disturbance of roosting and foraging habitat. Indirect impacts would result from increased noise and human presence in areas where eagles may be present. Because the majority of eagle roosting within the planning area occurs on private lands, impacts to roosting sites would be minimal. Long term impacts (i.e., improved roosting sites, foraging habitat, etc.) would be associated with protection and restoration of riparian habitats.

Potential direct and indirect impacts to this species from site-specific restoration and maintenance activities would be minimized through the implementation of management actions, and application of BLM best management practices. Beneficial effects from management actions within riparian/wetland and upland habitats in the planning area would include long-term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, and improved roosting and foraging habitat.

Desert Tortoise. Vegetation communities within the Mojave Desert ecosystem would be managed for the desired ranges of conditions as outlined in Section 2.4.5, Vegetation Resources. These desired ranges of condition would be achieved through integrated treatments which may include a wide array of tools and techniques. See the tools and techniques discussion in Appendix G.

Impacts could result from herbicide application, mechanical treatments, and limited application of prescribed fire. Mechanical methods of invasive species control may involve the use of machinery, off-highway vehicles, or hand tools, broadcast seeding, and planting of live shrubs and trees. Potential impacts to the desert tortoise from restoration and maintenance activities could result from increased harassment, crushing of burrows, injury/mortality of individuals from vehicles or machinery, and disruption of behavior. Indirect impacts from noise and human presence could further reduce habitat quality in the vicinity of vegetation treatments in the short term. Potential direct and indirect impacts to the desert tortoise from site-specific restoration and maintenance activities would be minimized by implementation of management actions and BLM best management practices. In the long-term, beneficial effects from management actions would improve habitat quality.

Other Sensitive Species on BLM-administered Land. Under the Proposed RMP, vegetation treatment and habitat management would be oriented toward proactive habitat restoration to achieve the desired range of vegetation conditions described in Section 2.4.5, Vegetation Resources. Although treatment and maintenance activities would occur over the full spectrum of vegetation communities, the majority of the area to be treated occurs within the low-elevation sagebrush and pinyon-juniper vegetation communities. Restoration actions targeted to attain the desired range of conditions for sagebrush communities at the landscape scale may have short- and long-term impacts to greater sage-grouse and other sagebrush dependant species if too much vegetation is treated at any one time within a watershed. Impacts would be minimized by mitigation at the watershed or site-specific scale. Limited areas of treatment also would occur in other vegetation communities where current conditions are not within the desired range of conditions, with particular emphasis in riparian and aspen communities.

Impacts to wildlife (including special status species) from vegetation management would include the long-term loss of woody vegetation (i.e., trees, woodlands, and shrubs) and the temporary loss of forage and cover in the areas being treated until the desirable perennial species become reestablished. Incorporation of appropriate management actions and best management practices from Sage Grouse Best Management Practices (Appendix L of the Draft Ely RMP/EIS [July 2005]) and adherence to Guidelines for Management of Sage Grouse Populations and Habitats (Connelly et al. 2000) would limit the extent and severity of these impacts within greater sage-grouse habitats. It is anticipated that treated areas would result in increased herbaceous forage and ground cover in the short term, followed by the establishment of shrub vegetation in the long term that meets the desired range of conditions. On a watershed level, restoration activities would result in higher quality forage, increased vegetation cover and structure, and improved breeding and seasonal habitats for wildlife species. On a landscape level, restoration and habitat management would benefit special status species by reducing habitat degradation and fragmentation, promoting ecological health and vegetation resiliency, and improving overall habitat quality.

Plant Species

Ute Ladies'-tresses. The proposed vegetation treatment program in the planning area is not expected to directly affect the population of Ute ladies'-tresses which occurs on private lands near Panaca Spring.

Wild Horses.

Fish Species

Pahrump Poolfish, Big Spring Spinedace, White River Springfish, Hiko White River Springfish, Pahranagat Roundtail Chub, White River Spinedace, and Railroad Valley Springfish. No wild horse herd management areas overlap habitat for these fish species. Therefore, there would be no direct impact to these species. There also would be no indirect impacts from managing wild horses within herd management areas adjacent to these species' habitats because the horse herds would be managed at appropriate management levels and there are no available water sources for the animals near these aquatic habitats.

Other Sensitive Aquatic Species on BLM-administered Land. Other special status fish (Meadow Valley desert sucker, Meadow Valley speckled dace, Bonneville cutthroat trout) and springsnails could be affected by the Eagle Herd Management Area, as discussed for Big Spring spinedace. No herd management areas overlap with upper White River occupied by the White River desert sucker, White River speckled dace, and relict dace.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. No wild horse management areas would overlap with suitable Southwestern willow flycatcher habitat and potential yellow-billed cuckoo habitat (see **Map 3.7-1**). As a result, no direct or indirect impacts to Southwestern willow flycatcher and yellow-billed cuckoo would occur from the management of wild horses. In the long term, beneficial effects would occur from the reduction of approximately 157 acres of Southwestern willow flycatcher habitat and approximately 80 acres of yellow-billed cuckoo habitat as the Applewhite, Blue Nose Peak, Clover Mountain, Delamar Mountain, and Meadow Valley Mountain herd management areas are eliminated (see **Map 3.7-1**). These effects would include long term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved nesting and foraging habitat, and potential increases in species distribution. However, in the short-term these impacts could occur until the wild horses are removed.

Bald Eagle. No direct or indirect impacts to bald eagles would occur as a result of wild horse management actions based on the assumption that wild horse herds would be managed at appropriate management levels.

Desert Tortoise. No wild horse management areas designated in the RMP would overlap with desert tortoise habitat. Two herd management areas that previously overlapped 74,500 acres of desert tortoise habitat (see **Map 2.4.7-1**) would be eliminated. In the long term, this would benefit desert tortoise habitat with increased forage availability and cover, and the elimination of potential trampling from wild horses. However, in the short term, these impacts could occur until the wild horses are removed. Implementation of management actions would minimize potential impacts from wild horse management actions should wild horses enter desert tortoise habitat and need to be removed.

Other Sensitive Wildlife Species on BLM-administered Land. Special status wildlife species conflicts with wild horses would include localized trampling and foraging activities over a large geographic area consisting of approximately 3.7 million acres of habitat in the long term. These effects would be most apparent within the limited riparian and wetland habitats that occur within herd management areas. Under this alternative, some other special status species (e.g., banded gila monster) would see increasing herbaceous forage and water availability, within the Mojave Desert ecological system, as a result of eliminating several existing herd management areas.

Plant Species

Ute Ladies'-tresses. This species occurs on private land not within or bordered by any proposed herd management area. Thus, impacts from wild horse management are not anticipated.

Other Sensitive Plant Species on BLM-administered Land. The management of wild horses within six herd management areas totaling approximately 3.7 million acres would reduce the potential conflicts with habitat for various special status plants. Some special status plant species (e.g., Basin waxflower and Schlesser pincushion cactus) are known to occur within herd management areas. However, wild horses are not likely to concentrate in the sites occupied by these plants and the presence of wild horses is not expected to jeopardize these populations. Known and potential habitat for special status plants located outside of these herd management areas would not be subjected to effects of wild horse grazing in the long term. Vegetation cover and native species diversity within these habitats would likely improve in the long term.

Lands and Realty.

Proposed land and realty actions related to corridors and disposals are depicted on **Maps 2.4.12-1** through **2.4.12-5**.

Approximately 75,600 acres of land would be available for possible land disposal. It would not include any designated critical habitat for threatened and endangered species. Potential land disposals would be evaluated for effects on special status species and their habitat on a case-by-case basis, in accordance with NEPA. Thus, direct impacts of land disposals on special status wildlife species are expected to be minimal, but indirect effects may be more important as these lands are developed for residential and commercial purposes with associated increases in the recreational usage of adjacent public lands.

New 0.5-mile-wide utility corridors would be designated within the planning area. Potential effects to special status species from rights-of-way within the corridors would include the incremental long-term disturbance of habitat and added effects from habitat fragmentation. Short-term impacts would result from increased noise and human presence. These effects are anticipated to occur incrementally over time and spatially over a large portion of the planning area. Potential impacts would include limited mortalities of smaller, less mobile species (e.g., small mammals and reptiles) and the displacement of more mobile species into adjacent habitats. In areas where potential development intersects or approaches important habitat (e.g., greater sage-grouse breeding areas), resulting effects may require specific mitigation measures to minimize potential impacts. Requirements that have been developed to reduce or prevent potential impacts to special status species and their habitats from utility rights-of-way are presented in Section 2.4.12.7. Development of utility projects and communication sites would be evaluated for effects on special status species and their habitat and mitigated as needed, on a case-by-case basis, in accordance with NEPA.

Land use authorization facilities would be located and consolidated within or adjacent to existing land use authorizations, where feasible, thus minimizing overall effects to special status species. Special status species would benefit from the avoidance or exclusion of land use authorizations within ACECs (see Section 2.4.12, Lands and Realty). Development of new land use authorization facilities would be evaluated for effects on special status species and their habitat on a case-by-case basis, in accordance with NEPA.

Fish Species

Pahrump Poolfish. Lands around Shoshone Ponds would be retained in public ownership because these lands would be designated as an ACEC (see **Map 2.4.22-1**). No corridors would be designated within 5 miles of Shoshone Ponds (See **Map 2.4.12-5** and **Map 3.7-1**). Rights-of-way and other land-use authorization would not be granted within the Shoshone Ponds ACEC. Therefore, lands and realty actions would not affect the Pahrump poolfish.

Big Spring Spinedace. Lands in and around Condor Canyon would be retained in public ownership because these lands would be designated as an ACEC (**Map 2.4.22-1**). Potential land disposal areas are located downstream from Condor Canyon; therefore, no impacts would occur from these actions (see **Map 2.4.12-4**). No corridors would be designated within 3 miles of Condor Canyon (see **Map 2.4.12-5**). Condor Canyon would be an avoidance area for rights-of-ways and other land-use authorizations. Therefore, lands and realty actions would not affect the Big Spring spinedace.

White River Springfish. Retention of designated critical habitat at Ash Springs would benefit the White River springfish. No land disposal areas overlap with White River springfish habitat at Ash Springs (see **Map 2.4.12-1**). Additional protection for White River springfish would be provided by the withdrawal of an 80-acre area around Ash Springs from disposal, rights-or-way, and other land use authorizations. No designated corridors are within 5 miles of Ash Springs (see **Map 2.4.12-5** and **Map 3.7-1**). Therefore, lands and realty actions would not affect the White River springfish.

Hiko White River Springfish, Pahranagat Roundtail Chub, White River Spinedace, and Railroad Valley Springfish. There would be no direct impact to these species or their habitats from BLM land and realty actions, since they occur on private/state/tribal land. Indirect impacts may occur from construction activities in designated corridors which are within 0.5 mile of Crystal Spring (Hiko White River springfish habitat) (see **Map 2.4.12-5**). These indirect impacts would include potential sedimentation from surface disturbances within the corridors and temporary water quality deterioration. No designated corridors occur within a mile of the habitat for the Hiko White River springfish at Hiko Spring, White River spinedace, Railroad Valley springfish, and Pahranagat roundtail chub (see **Map 2.4.12-5**). Issuance of rights-of-way and other land use authorizations adjacent to Hiko Springs, Crystal Springs, Pahranagat Ditch, Flag Spring, Sunnyside Creek, and the springs in Railroad Valley also could have indirect impacts. These indirect impacts would include potential sedimentation from surface disturbances within the corridors and temporary water quality deterioration. These impacts would be reduced through implementation of BLM's best management practices (Appendix F, Section 1).

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. Lands along Clover Creek and Lower Meadow Valley Wash would be retained in public ownership because these lands would be designated as an ACEC. No land disposal areas have been identified in other BLM-managed habitat for the Southwestern willow flycatcher or yellow-billed cuckoo outside of Clover Creek and the Lower Meadow Valley (see **Map 2.4.12-1**). Two designated corridors originate at Clover Creek and Lower Meadow Valley Wash (see **Map 2.4.12-5**). Impacts from construction activities within these corridors could include surface disturbance of riparian vegetation communities. Indirect impacts to the Southwestern willow flycatcher and yellow-billed cuckoo on BLM-administered lands would result from the incremental short term loss of nesting and foraging habitat and from increased noise and human presence. These impacts would be minimal because of the application of best management practices and they would occur only at an individual point along the habitat not following the length of the habitat. Lands around Clover Creek and Lower Meadow Valley Wash would be an avoidance area for rights-of-way and other land-use authorizations. Therefore, issuance of rights-of-way and other land-use authorizations would not affect the Southwestern willow flycatcher and yellow-billed cuckoo.

There would be no direct impact to these species or their habitats from BLM land and realty actions within Pahranagat Valley since they occur on private and state lands in this area and not on BLM-managed federal land. Indirect impacts from land disposal would include increased human presence, noise, and construction activity in the vicinity that could affect breeding and nesting behavior of these species There are two corridors designated in the vicinity of Hiko (see **Map 2.4.12-5**). Impacts from new right-of-way construction activities within these corridors would include intermittent noise and human presence that could affect breeding and nesting behavior of these species, if they are present in proximity to construction locations. Issuance of rights-of-ways and other land use authorization adjacent to Southwestern willow flycatcher and yellow-billed cuckoo habitat in Pahranagat Valley also could have similar indirect impacts. These impacts would be reduced through implementation of best management practices (Appendix F, Section 1).

Bald Eagle. Proposed land disposal areas would not overlap with known bald eagle winter roost areas (see **Maps 2.4.12-1**, **2.4.12-4**, **2.4.12-3**, and **2.4.12-2**). In general, proposed land disposals occur adjacent to communities. As a result, no direct or indirect impacts to bald eagles would occur from land disposals.

Designated utility corridors would not overlap with known bald eagle winter roost areas (see **Map 2.4.12-5**). Impacts associated with construction activities within utility corridors, rights-of-way, and other land use authorizations would include temporary surface disturbance, noise, and human presence. These impacts would be reduced through implementation of BLM best management practices such as the application of current policies and methodologies for powerline construction to minimize raptor electrocution and collision potential.

Desert Tortoise. All designated critical habitat within the planning area, including the three existing desert tortoise ACECs, would be retained in federal ownership unless the disposal results in the acquisition of land with higher quality habitat (see **Map 2.4.7-1**). These areas would be managed to assist desert tortoise recovery efforts. Since the area within the three existing desert tortoise ACECs is considered the best available habitat in the planning area, the retention of these areas plus the designated critical habitat outside the ACECs would enhance tortoise recovery efforts in the Northeastern Mojave Recovery Unit.

Under the Proposed RMP, approximately 4,870 acres of non-critical desert tortoise habitat outside of desert tortoise ACECs have been identified for possible disposal (see **Maps 2.4.12-2** and **2.4.7-1**). As a result, indirect impacts to desert tortoise habitat from land disposals could include the loss of habitat as these lands are transferred to private ownership. Development and construction activities after transfer would cause loss of vegetation and habitat, and could result in harm, harassment, and mortality of individual tortoises. Other possible indirect impacts from subsequent development activities on these lands could include the following:

- Increase in vehicle traffic and potential mortality of desert tortoises;
- Increased harassment and possible collection of desert tortoises by the public;
- Increased predation by pets and ravens;
- Increased barren areas that result in greater exposure of tortoises to predators;
- Potential effects of noise, dust, and vibration from construction activity;
- Spread of disease and subsequent disruption of established home ranges as a result of escaped or unauthorized releases of desert tortoises in the wild;
- Increased trash and litter leading to injury or mortality from ingestion;
- Exposure or ingestions of toxic materials from residential or illegal dumping sources; and
- Increased injury or mortality from falls into exposed construction excavations and trenches.

Acquisitions of land within tortoise habitat would help protect additional habitat from loss or degradation and assist in meeting the delisting criteria for the desert tortoise in the Northeastern Mojave Recovery Unit.

Portions of five corridors identified in the Proposed RMP overlap with desert tortoise habitat, designated critical habitat, or desert tortoise ACECs (see **Maps 2.4.12-5** and **3.7-1**). Approximately 41 miles of utility corridors would occur within the three existing desert tortoise ACECs, with 12.1 miles being located in the Kane Springs ACEC, 16.1 miles in Mormon Mesa ACEC, and 12.8 miles in the Beaver Dam Slope (Nevada) ACEC. Approximately 90 miles of utility corridors would occur within regular desert tortoise habitat and designated critical habitat outside of ACECs. Lands and realty actions that could occur within these corridors include but are not limited to power lines, pipelines, transmission lines, and highways. If fully developed, approximately 25,500 acres of desert tortoise habitat could be impacted outside of the ACECs (see **Table 4.7-2**).

Table 4.7-2
Potential Disturbance from Corridors within Desert Tortoise Habitat

	Miles of Corridor	Approximate Acreage[1]
Non-critical desert tortoise habitat	48.2	14,820
Designated critical habitat outside ACECs	40.7	10,820
Designated critical habitat within ACECs	41.3	11,080
Totals	**130.2**	**36,720**

[1] Rounded to tens.

The ACECs would be considered avoidance areas for rights-of-way and other land use authorizations, but additional rights-of-way could be authorized subject to NEPA analyses and Section 7 consultation for specific right-of-way projects. Direct impacts from the authorization of additional rights-of-way within corridors in the ACECs could include the long-term incremental reduction of habitat and increased habitat fragmentation. Short-term impacts from construction, operation, and maintenance activities also could result in increased collection opportunities, crushing of burrows, injury/mortality from vehicles or equipment, and disruption of behavior. Indirect impacts from noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads could further reduce habitat quality in the vicinity of development areas. These impacts would be reduced through Section 7 consultation and implementation of management action and best management practices (Appendix F, Section 1).

Overhead power lines could provide additional perching sites for ravens along the 156 miles of designated corridors within desert tortoise habitat. By concentrating power lines in narrow rights-of-way, particularly within the ACECs, raven perching sites would be localized rather than dispersed throughout desert tortoise habitat.

Rights-of-way and other land use authorizations could be authorized in desert tortoise habitat and designated critical habitat outside of ACECs. Short-term and long-term impacts of these activities would be similar to those discussed above within the ACECs. Roads for utility rights-of-way could provide access into the three desert tortoise ACECs and increase the potential for tortoise mortalities and habitat degradation. Emphasizing co-location of communication sites would minimize the impacts to desert tortoise habitat. These impacts within all types of desert tortoise habitat would be reduced through implementation of management actions and best management practices (Appendix F, Section 1). Payment of remuneration fees would compensate for acreage of tortoise habitat disturbed.

Limiting Federal Aid Highway material site rights-of-way within a 1-mile-wide corridor along U.S. Highway 93 and Kane Springs Road within the Kane Spring ACEC and the Carp-Elgin Road within the Mormon Mesa ACEC would benefit tortoise habitat by limiting surface disturbances relating to material sites. The majority of the required mineral material pits would be located along Highway 93; the Nevada Department of

Transportation would continue to hold their existing material site rights-of-way. The Lincoln County Road Department also may have the need for additional free use pits along the Kane Springs and Carp-Elgin roads. However, material sites will be restricted to not less than 10-mile intervals over the life of the plan, and it is anticipated that no more than 500 acres of habitat loss would occur from these pits within the proposed ACECs. Implementation of management actions and best management practices (Appendix F, Section 1) would reduce the impacts.

Direct impacts from the authorization of rights-of-way within corridors, development of communication sites, and other land use authorizations within desert tortoise habitat outside of desert tortoise ACECs could include the incremental reduction of habitat and increased habitat fragmentation. Indirect impacts from noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads could further reduce habitat quality in the vicinity of development areas. Impacts from construction, operation, and maintenance activities also could result in increased collection opportunities, crushing of burrows, injury/mortality from vehicles or equipment, and disruption of behavior. The evaluation of minimal impact uses on a case-by-case basis would ensure that protective measures for the desert tortoise and habitat were included within the authorizations. If appropriate, potential impacts from the management of lands and realty would be minimized through Section 7 consultation, where required, and implementation of management actions.

Plant Species

Ute Ladies'-tresses. This species occurs on private land. Thus, impacts from lands and realty management actions are not anticipated.

Renewable Energy.

Fish Species

Pahrump Poolfish, Big Spring Spinedace, White River Springfish, White River Spinedace, Hiko White River Springfish, Pahranagat Roundtail Chub, and Railroad Valley Springfish. Although development of wind and solar energy projects could occur throughout the planning area (**Maps 2.4.13-1** and **2.4.13-2**), the topographic setting of aquatic environments discussed in this BA is not conducive to such energy development, and wind energy development would conform to BLM Wind Energy Development Policies and Best Management Practices. Therefore, the potential for wind and solar energy projects to impact fish species is considered to be negligible. As discussed in Section 2.6, Fish and Wildlife, the presence of special status species would be considered in NEPA analyses when making decisions on renewable energy land authorizations. This would apply to all federally listed fish species that also would require Section 7 consultation. Proposed projects would be subject to NEPA and Section 7 compliance, which would ensure that potential impacts to federally listed fish species would be mitigated.

Other Sensitive Aquatic Species on BLM-administered Land. Other special status species in Upper and Lower Meadow Wash (Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace) and

White River Valley (White River desert sucker, White River speckled dace, relict dace, and springsnails) could be affected by renewable energy development as discussed for the species above.

Biomass energy development would occur in relation to vegetation restoration. Impacts would be similar to those discussed for Vegetation Resources.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. Habitat for these species on BLM-administered lands occurs within the proposed Lower Meadow Valley Wash ACEC which would be closed to renewable energy development. Therefore, renewable energy development would not affect these species.

Bald Eagle. Potential impacts to the bald eagle from the development of renewable energy could occur throughout the entire planning area. High and moderate potential areas available for the development of wind and solar facilities consist of approximately 273,300 acres (2.3 percent of the planning area) and 7.2 million acres (63.0 percent of the planning area), respectively (see **Maps 2.4.13-1** and **2.4.13-2**).

Direct impacts from wind energy development would include mortality from turbine collisions, electrocutions, wire strikes, vehicle strikes, and poisoning. Based on observed mortalities at existing wind energy facilities, Erickson et al. (2001) estimate overall raptor fatalities at 0.006 per turbine per year outside of California. Mortality rates vary among raptor species and are affected by population densities, location and surrounding habitat, turbine design, and various other factors. Indirect impacts would include additional surface disturbances affecting habitat for prey species, increased noise and human presence, increased habitat fragmentation, and reduction in foraging habitat.

Indirect impacts from noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads could further reduce habitat quality in the vicinity of project areas. Potential impacts to this species and its habitat would be minimized through Section 7 consultation for specific renewable energy and the implementation of management actions and best management practices. Wind energy development within the planning area would conform to the policies and guidelines presented in Appendix F, Section 3.

Impacts associated with potential solar energy development would be similar to the impacts associated with other rights-of-way. Impacts associated with construction activities for solar development facilities and associated utility rights-of-way would include temporary surface disturbance, noise, and human presence. These impacts would be reduced through implementation of BLM best management practices.

Biomass energy development would occur in relation to vegetation restoration. Impacts would be similar to those discussed in vegetation resources.

Desert Tortoise. The three desert tortoise ACECs, totaling approximately 203,670 acres, are closed to renewable energy development. Thus no impacts are anticipated from renewable energy development. Approximately 120 acres of moderate to high potential wind areas occur within critical habitat and

2,670 acres occur on non-critical habitat outside of ACECs. In addition there are approximately 46,200 acres and 303,000 acres of high and moderate potential solar areas within designated critical habitat and non-critical habitat outside of ACECs, respectively (see **Maps 2.4.13-1** and **2.4.13-2**). However, the amounts of moderate to high potential wind and solar areas that occur within desert tortoise habitat (excluding ACECs) represent extremely small percentages of the identified moderate to high potential wind areas (approximately 273,300 acres) and solar areas (approximately 7.2 million acres) in the planning area, thus reducing the potential for renewable energy development within desert tortoise habitat. Impacts associated with renewable energy development within desert tortoise habitat would be similar to those described for rights-of-way and other land use authorizations. Desert tortoise habitat generally is unsuitable for development of biomass energy facilities.

Other Sensitive Wildlife Species on BLM-administered Land. Conflicts from renewable energy development would likely have localized effects to special status species and their habitats. Long-term impacts would result from habitat loss and increased habitat fragmentation until reclamation is completed and native vegetation has become reestablished. Short-term impacts would result from increased noise and human presence. Effects to special status species would include habitat disturbance and added effects from habitat fragmentation (e.g., increased noise and human presence). These effects are anticipated to occur incrementally over time and at scattered locations within the planning area. Potential impacts would include limited mortalities of smaller, less mobile species, such as small mammals and reptiles, and the displacement of more mobile species into adjacent habitats. In areas where potential development intersects or approaches important species habitat (e.g., greater sage-grouse breeding areas), specific mitigation measures may be required to minimize potential impacts. Development of renewable energy would be evaluated for effects on special status species and their habitats on a case-by-case basis, in accordance with NEPA. Best management practices that would reduce potential impacts to special status species are presented in Appendix F, Section 1.

Plant Species

Ute Ladies'-tresses. This species occurs on private land. Thus, impacts from renewable energy development are not anticipated.

Other Sensitive Plant Species on BLM-administered Land. Potential impacts to habitat for special status plants would be addressed on a case-by-case basis. Disturbances related to known and potential habitat for the Ute ladies'-tresses orchid or other special status plants would continue to be evaluated and mitigated, as needed, on a site-specific, case-by-case basis to minimize potential impacts to special status plants.

Travel Management and Off-highway Vehicle Use.

Fish Species

Pahrump Poolfish, Big Spring Spinedace, and White River Springfish. Off-highway vehicle use in the area surrounding Shoshone Ponds, Upper Meadow Valley Wash, and Ash Springs would be restricted to existing roads and trails until site-specific transportation plans are developed, which would minimize sediment-related effects on habitat for these species. If new roads or trails are designated, NEPA review and Section 7 compliance would be required to identify mitigation to avoid or minimize effects on federally listed species.

Hiko White River Springfish, Pahranagat Roundtail Chub, White River Spinedace, and Railroad Valley Springfish. Road use on BLM-administered lands would not affect private land surrounding Hiko Springs, Crystal Springs, Pahranagat Ditch, Flag Springs, Sunnyside Creek, and springs in the Duckwater area. The basis for this conclusion is that the BLM-administered lands are located at least several hundred feet from these aquatic habitats. If new roads or trails are designated, NEPA review and Section 7 compliance would be required to identify mitigation to avoid or minimize effects on federally listed species.

Other Sensitive Aquatic Species on BLM-administered Land. Other special status species in Upper and Lower Meadow Wash (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace) and White River Valley (White River desert sucker, White River speckled dace, relict dace, and springsnails) could be affected by vehicle use as discussed for Big Spring spinedace and the White River Valley fish species. Future vehicle-related impacts to Bonneville cutthroat trout habitat in Goshute Creek would be eliminated because travel would be closed in this area.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. Motorized vehicle use would be restricted to existing roads and trails until the designation process is completed and subsequently in the majority of the planning area (approximately 10.3 million acres) to designated roads and trails. Since the majority of southwestern willow flycatcher and yellow-billed cuckoo habitat within the planning area occurs on lands that are not managed by the BLM (e.g., Pahranagat National Wildlife Refuge, Key Pittman Wildlife Management Area, and private lands), these areas would not be directly impacted by BLM's management of transportation and off-highway vehicle use. Direct impacts to riparian habitats for these species on BLM-administered land (i.e., within the Lower Meadow Valley Wash ACEC [see **Map 2.4.14-1**]) from off-highway vehicle use would be limited to activities on designated roads and trails. No new roads would be constructed. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality in the vicinity of the designated roads and trails. Potential impacts to these species and their habitats would be minimized through implementation of the Ely transportation planning process, and implementation of BLM best management practices. Beneficial effects to this species would result from 1) the closure of approximately 1.1 million acres to off-highway vehicle use, including 7 miles of southwestern willow flycatcher and yellow-billed cuckoo habitat located in the proposed Lower Meadow Valley Wash ACEC (see **Map 2.4.14-1**), and 2) the restriction of motorized vehicles to existing roads and trails until the designation process is completed and subsequently to designated roads and trails. Closure to off-highway vehicle use would result in long term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved nesting and foraging habitat, and potential increases in species distribution.

Bald Eagle. No direct or indirect impacts to nesting bald eagles from off-highway vehicle use would be anticipated based on the absence of bald eagle nest sites within the planning area, and the implementation of the Ely transportation planning process. Motorized vehicles would be restricted to existing roads and trails until the designation process is completed and subsequently to designated roads and trails. Direct impacts to riparian and upland vegetation from off-highway vehicle use, or the construction or maintenance of roads within the planning area could result in the incremental long-term disturbance of foraging or roosting habitat and added effects from habitat fragmentation. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality in the vicinity of the designated roads and trails. Potential impacts to this species and its habitat would be minimized through implementation of BLM's management actions and best management practices. Beneficial effects to this species would result from the closure of approximately 1.1 million acres to off-highway vehicle use, including 7 miles of potential bald eagle riparian habitat located in the proposed Lower Meadow Valley Wash ACEC (see **Map 2.4.14-1**). Closure to off-highway vehicle use would result in long term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved nesting and foraging habitat, and potential increases in species distribution.

Desert Tortoise. Management of motorized vehicle use within the three desert tortoise ACECs would include limitation of off-highway vehicle use to designated roads and trails, except within designated wilderness areas, which are closed (approximately 40,160 acres in Mormon Mesa ACEC and 32,240 acres in Kane Springs ACEC). Establishment of new trails would be restricted. This limitation lessens the possibility for direct mortalities and the crushing of burrows, as a result of cross-country vehicular traffic in the 203,670 acres of the three desert tortoise ACECs. Motorized vehicle use within desert tortoise habitat outside the ACECs also would be restricted to designated roads and trails within desert tortoise habitat. Potential impacts to the desert tortoise from off-highway vehicle use or the construction or maintenance of roads within the planning area outside the ACECs could include the loss of habitat and increased habitat fragmentation. Indirect impacts from noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality in the vicinity of the designated roads and trails. Impacts also could result from increased collection opportunities, crushing of burrows, injury/mortality from vehicles, and disruption of behavior. Potential impacts to desert tortoise would be minimized through implementation of management actions to reduce mortality on specific road segments, and application of BLM best management practices. Beneficial effects to this species would include the closure of approximately 244,480 acres of desert tortoise habitat in designated wilderness areas to off-highway vehicle use (see **Map 2.4.14-1** and **Table 4.7-3**). Limiting recreational off-highway vehicle use to designated roads and vehicle trails also would continue to minimize the proliferation of new roads trails within desert tortoise habitat and the loss or fragmentation of desert tortoise habitat. This limitation also would lessen the possibility for direct mortalities and the crushing of burrows, as a result of cross-country vehicular traffic in the 203,670 acres of the three desert tortoise ACECs.

Table 4.7-3

Closures to Off-highway Vehicle Use within Desert Tortoise Habitat

Habitat Category	Approximate Acreage[1] Closed to Off-highway Vehicle Use
Non-critical habitat outside ACECs	169,910
Designated critical habitat outside ACECs	2,110
Non-critical habitat within ACECs	11,510
Designated critical habitat within ACECs	60,950
Total Off-highway Vehicle Closures in Desert Tortoise Habitat	244,480

[1] Rounded to tens.

Other Sensitive Wildlife Species on BLM-administered Land. Development of roads and trails within the planning area would be expected to result in the incremental long-term loss of habitat and increased habitat fragmentation. Short-term impacts to special status species would result from increased noise and human presence. The greatest effects from these management programs would occur from activities that intersect or approach important species habitat (e.g., greater sage-grouse breeding areas). Development of new roads and trails within the planning area would be evaluated for effects on special status species and their habitat on a case-by-case basis, in accordance with NEPA. Best management practices that would reduce potential impacts to special status species are presented in Appendix F, Section 1.

Plant Species

Ute Ladies'-tresses. This species occurs on private land. Thus, impacts to known populations of Ute ladies'-tresses would result from the travel management of travel and off-highway vehicle use on public lands. If additional populations are found on public lands, they would receive site-specific management protection.

Other Sensitive Plant Species on BLM-administered Land. The limitation of vehicular traffic to designated roads and trails as determined through a subsequent public process and area-specific analysis on 10.3 million acres would reduce the potential for physical damage to special status plants and deterioration of habitat present in these areas in the short and long term. As part of the watershed analysis, surveys for special status plants would be conducted within potential habitat areas within the planning area. Therefore, impacts to special status plants are not anticipated to occur within off-highway vehicle emphasis areas.

Recreation.

Fish Species

Pahrump Poolfish and Big Spring Spinedace. Special recreation management areas are not planned in locations that would affect the Shoshone Ponds or Condor Canyon (see **Map 2.4.15-1**). Dispersed recreational use involving walking on trails or vehicle traffic on existing roads and trails could result in surface disturbance. The motorcycle special recreation permit areas and motorcycle truck race routes would not affect habitat for Pahrump poolfish or Big Spring spinedace since these activities do not occur near the Shoshone Ponds or Condor Canyon.

White River Springfish. One new special recreation management area (Pahranagat Recreation Management Area) would occur in Pahranagat Valley including the Ash Springs area (see **Map 2.4.15-1**). Dispersed recreational use involving walking on trails or off-highway vehicle travel on roads and trails could result in surface disturbance. If use is limited to designated roads and trails, sediment input to the spring would be minimal. In addition, recreational swimming would continue, which could disturb bottom substrates and aquatic vegetation. The motorcycle special recreation permit areas and motorcycle truck race routes would not affect habitat for this species.

Hiko White River Springfish and Pahranagat Roundtail Chub. One new special recreation management area (Pahranagat Recreation Management Area) would occur in Pahranagat Valley, which surrounds Hiko Springs, Crystal Springs, and Pahranagat Creek (see **Map 2.4.15-1**). Recreation activities on BLM-administered land could result in surface disturbance, but these areas would be at least 400 to 1,000 feet from the waterbodies. Potential effects on habitat for Hiko White River springfish and Pahranagat roundtail chub would be considered low due to the distance from disturbance areas. The motorcycle special recreation permit areas and motorcycle truck race routes would not affect habitat for these species.

White River Spinedace and Railroad Valley Springfish. No new special recreation management areas are planned for areas surrounding the Flag Springs and Sunnyside Creek area or the Duckwater area (see **Map 2.4.15-1**). However, dispersed recreational use could occur on BLM-administered land, which is located approximately 265 feet from the White River spinedace habitat and approximately 400 to 1,000 feet from the Railroad Valley springfish habitat. Potential effects on habitat for these species would be considered low due to the distance from disturbance areas. The motorcycle special recreation permit areas and motorcycle truck race routes would not affect habitat for these species.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. As discussed above for these species, the majority of habitat for the Southwestern willow flycatcher and yellow-billed cuckoo within the planning area occurs on lands that are not managed by the BLM (e.g., Pahranagat National Wildlife Refuge, Key Pittman Wildlife Management Area, and private lands). These areas would not be directly impacted by the BLM's management of recreational use, and motorized race events (i.e., motorcycle and truck) on the public lands. However, the Pahranagat Valley Special Recreation Management Area would occur in the immediate vicinity of riparian habitat potentially used by these species (see **Map 2.4.15-1**). Direct impacts to riparian vegetation in this area from recreation use could result in the incremental long-term disturbance of breeding and foraging habitat for these species and added effects from habitat fragmentation. Direct impacts also could result in the loss of eggs or young if vehicle use is permitted in riparian habitat during the breeding season. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality in the vicinity of recreation areas.

Potential impacts from motorized competitive race events (i.e., motorcycle and truck) would continue to result in habitat loss and fragmentation. Direct impacts also could result in the loss of eggs or young if vehicle use is permitted in riparian habitat during the breeding season. Indirect impacts would include increased noise and human presence during trail maintenance and race events. However, effects from increased human presence and noise would be minimal due to infrequent use of roads and trails for race events.

Bald Eagle. Direct impacts to riparian and upland vegetation from recreation activities and events could result in the incremental long-term disturbance of foraging or roosting habitat. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality in the vicinity of recreation areas.

Potential impacts from motorized competitive race events (i.e., motorcycle and truck) would continue to result in periodic disturbance. Direct impacts to riparian and upland vegetation from recreation events could result in the incremental long-term disturbance of foraging habitat. Indirect impacts would include increased noise and human presence during trail maintenance and race events. However, effects from increased human presence and noise would be minimal due to infrequent use of roads and trails for race events.

Desert Tortoise. Closing the three desert tortoise ACECs to all speed competitive events has eliminated such events from 80 percent of designated critical desert tortoise habitat in the planning area. No direct tortoise mortalities would be caused by speed competitive events. Since, historically, only one of these types of events has occurred annually within the planning area, the benefits from this closure are anticipated to be minimal.

Non-speed organized events would be authorized to pass through the desert tortoise ACECs on designated routes, except during the tortoise's most active periods (March 15 – June 15, and August 15 – October 15) reducing impacts on desert tortoise and its habitat. The designation of routes would reduce the potential for course widening, additional soil compaction, and the creation of new courses. The non-speed nature of events and prohibition of events during the most active periods would minimize the potential for direct mortalities of tortoises. Impacts associated with spectators and pits would not occur, because these would not be allowed within the ACECs.

Allowing speed and non-speed events within desert tortoise habitat outside of ACECs could result in impacts to the desert tortoise and its habitat. By requiring that all future events be limited to existing roads and trails, the potential for further habitat destruction would be reduced. A potential would continue to exist for direct tortoise injury or mortalities during speed events. Based on past monitoring of these types of events in tortoise habitat, direct impacts to tortoise would be expected to be less than one tortoise every 30 years at current use levels, and less than one every 6 years based on the maximum projected levels. Other direct impacts from recreation activities also could result from increased collection opportunities, crushing of burrows, and disruption of behavior. Indirect impacts would result from increased noise and human presence during trail maintenance and race events. However, effects from increased human presence and noise would be minimal due to infrequent use of roads and trails for race events. Soil compaction and creation of new road and trails by spectators might occur, causing the potential loss of very small amounts of habitat. The roads used for these events would remain open to all other uses; the addition of these organized events would have little, if any, effect on the condition of the roads or surrounding areas. Historically there has been about one such event per year. It is expected that from one to five events would occur per year during the life of the plan.

Non-off-highway vehicle organized and commercial events such as trail rides and commercial sightseeing only would be allowed when consistent with the recovery and delisting of the desert tortoise, creating little or no effect on the tortoise or its habitat. Demand for these types of events historically has been less than one event per year.

Potential impacts to the desert tortoise associated with recreational use of roads and trails in desert tortoise habitat would be similar to those discussed above for race events and include the incremental reduction of habitat, increased habitat fragmentation, increased noise and human presence, dispersal of noxious weeds, dust effects which further reduce habitat quality, increased collection opportunities, crushing of burrows, injury/mortality from vehicles, and disruption of behavior. Potential impacts to the desert tortoise would be minimized through management actions.

Non-motorized recreation activities generally would neither benefit nor hinder recovery and delisting of the tortoise. However, it is possible that some localized areas of tortoise habitat could be impacted through increased soil compaction and erosion, trampled vegetation, and crushed or collapsed burrows.

Non-consumptive recreation activities, such as hiking, casual horseback riding, and nature photography, could increase during the life of the plan, and the proposed Pahranagat Special Recreation Management Area includes desert tortoise habitat near the town of Alamo (see **Map 2.4.15-2**). Surface disturbances or impacts to desert tortoise could occur as a result of the increase in these types of recreational activities in desert tortoise habitat. According to the Desert Tortoise (Mojave Population) Recovery Plan, such activities are compatible with the objectives for desert tortoise recovery (U.S. Fish and Wildlife Service 1994c).

Plant Species

Ute Ladies'-tresses. No direct or indirect impacts to known populations of Ute ladies'-tresses would result from the management of recreation on public lands. If additional populations are found on public lands, they would receive site-specific management protection.

Livestock Grazing.

Fish Species

Pahrump Poolfish. Livestock grazing would continue within the 17,322-acre Scotty Meadows allotment, which contains the refugium for the Pahrump poolfish at Shoshone Ponds (see **Maps 2.4.16-1** and **3.7-1**). Season-of-use is from June 1 to September 30 with a total of 1,227 active animal unit months. Scotty Meadows allotment has not been evaluated for rangeland health standards. Current grazing management would continue until the allotment is evaluated. The fenced area excluding livestock grazing around Shoshone Ponds would be expanded. This would protect the original pond and additional ponds where the species is located. However, grazing would continue on upland areas outside of the exclosure, but because of the larger area being protected around the ponds, livestock grazing should not impact this species and its habitat.

Big Spring Spinedace. Livestock grazing would continue within four allotments (Highland Peak, Black Hills, Condor Canyon, and N4/N5) which contain habitat for the Big Springs spinedace within Condor Canyon (see **Maps 2.4.16-1** and **3.7-1** and **Table 4.7-4**).

Table 4.7-4

Livestock Grazing Allotments Containing Habitat for Big Spring Spinedace

Allotment Name	Map Unit Number[1]	Approximate Public Acres[2]	Miles of Stream Habitat	Season of Use	Active Animal Unit Months
Black Hills	20	3,610	1.6	3/1 to 2/28	156
Condor Canyon	43	44,030	1.4	3/1 to 1/24	676
Highland Peak	93	45,450	0.4	10/16 to 5/15	3,704
N4/N5	132	43,500	0.9	3/1 to 2/28	825

[1] Map unit number refers to grazing allotments on **Map 2.4.16-1**.

[2] Rounded to tens.

The N4/N5 allotment has been evaluated and is meeting or making progress towards achieving the rangeland health standards. The other three allotments have not been evaluated.

Upon the next evaluation of these allotments, consideration would be given to adoption of recommendations contained in the Condor Canyon Habitat Management Plan (Guerrero 1989), which recommends that grazing within the canyon be limited to November 15 through March 15, with a utilization limit of 50 percent and bank trampling limit of 20 percent. This change, if implemented, would reduce impacts to the Big Spring spinedace and its habitat (Biological Opinion 1-5-87-F-61).

White River Springfish. Livestock grazing would continue within the 34,146 acre Pahranagat East allotment, which contains the designated critical habitat for this species (see **Map 2.4.16-1**). Season-of-use is from August 1 to May 31 with a total of 511 active animal unit months. This allotment has not been evaluated for rangeland health standards. Livestock are fenced out of the Ash Springs area. Although adjacent upland areas are available for livestock grazing potential sedimentation effects, would not affect this species or their habitat due to topography and distance from the spring.

Hiko White River Springfish, Pahranagat Roundtail Chub, and White River Spinedace. Habitats for these four fish species (Hiko Springs, Crystal Springs, Pahranagat Creek, Sunnyside Creek, Flag Springs, and Railroad Valley Springs) are not located within BLM-administered grazing allotments, and the waters within these habitats are not affected by grazing activities on public lands. Therefore, grazing on BLM-administered land would not affect habitat for these species.

Railroad Valley Springfish. Habitat for the Railroad Valley springfish is located on tribal and private land in the Duckwater area. Although springs occupied by this species are located on non-BLM-administered lands, these lands are managed as part of the Duckwater grazing allotment. This allotment contains 807,662 acres on public land with an active use of 23,364 animal unit months. This allotment has met or is making progress toward meeting the rangeland health standards. Grazing on adjacent BLM-administered land would not result in indirect effects on Railroad Valley springfish habitat, since this portion of the BLM-administered land does not contain surface water resources that would attract livestock.

Other Sensitive Aquatic Species on BLM-administered Land. Limitations to livestock grazing will be addressed in an ACEC management plan. Limitations would help to improve or reduce potential sediment input. Stream bank stability and riparian vegetation would be maintained. Cattle presence in Meadow Valley Wash also would be regulated through permit terms and conditions including limited seasons and intensity of use which would improve stability of bottom substrate and cover for Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace. Livestock grazing also would be reduced in upper White River, which would improve habitat conditions for the White River desert sucker, White River speckled dace, relict dace, and springsnails.

Under the Proposed RMP, approximately 11.3 million acres would be available for livestock grazing although portions of this area may be unavailable for sheep and goat grazing in occupied desert bighorn sheep habitat as the grazing permits for these allotments are considered for change. Livestock grazing will continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing will be maintained for 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use will be made as needed to meet or progress toward achievement of the standards. These actions would lessen the impacts to the resource.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. The majority of habitat for the Southwestern willow flycatcher and yellow-billed cuckoo within the planning area occurs on lands that are not managed by the BLM (e.g., Pahranagat National Wildlife Refuge, Key Pittman Wildlife Management Area, and private lands). These areas would not be directly impacted by the BLM's livestock grazing program. However, the Lower Meadow Valley Wash area provides riparian habitat on public lands for these species (see **Map 2.4.16-1** and **Table 4.7-5**). Direct impacts to these species and their habitats from livestock grazing on BLM-administered lands would include localized vegetation trampling, removal of cover plants due to grazing or browsing, and erosion of stream banks. These impacts to riparian vegetation could result in the incremental long-term disturbance of breeding and foraging habitat for these species and added effects from habitat fragmentation. Direct impacts also could result in the loss of eggs or young if grazing use is permitted in riparian habitat during the breeding season. Indirect impacts from increased surface disturbance and dispersal of noxious weeds could further reduce riparian habitat quality. Potential impacts to these species and their habitat would be minimized through restrictions on season of grazing use and other terms and conditions on the grazing permit.

Table 4.7-5
Livestock Grazing Allotments Containing Habitat for Southwestern Willow Flycatcher and Yellow-billed Cuckoo

Allotment Name	Map Unit Number[1]	Public Acres of Affected Habitat	Season of Use	Active Animal Unit Months
Applewhite	1	120	3/1 to 2/28	562
Ash Flat	2	187	5/1 to 3/24	74
Breedlove	23	209	3/1 to 2/28	698
Caliente	28	1	3/1 to 2/28	40
Cottonwood	46	11	5/1 to 10/31	1,296
Henrie Complex	91	587	11/1 to 4/30	1,380
Meadow Valley	120	135	Cattle 11/1 to 4/30 Horses 3/1 to 2/28	56
Oak Springs	141	139	3/1 to 2/28	9,268
Peck	148	7	3/1 to 2/28	397
Pennsylvania	149	97	5/1 to 10/31	588
Rainbow	157	7	3/1 to 2/28	665
Rox-Tule	164	98	Closed[2]	0
Schlarman	174	105	11/1 to 4/30	240

[1] Map unit number refers to grazing allotments on **Map 2.4.16-1.**
[2] Allotment unavailable for grazing in association with designation of desert tortoise ACECs.

The Cottonwood, Henrie Complex, and Schlarman allotments have been evaluated and are meeting or making progress towards achieving the rangeland health standards. The other nine active allotments in **Table 4.7-5** will be evaluated to determine if they are meeting or making progress toward meeting the standards for rangeland health.

Bald Eagle. No direct or indirect impacts to bald eagles would occur as a result of livestock grazing based on implementation of the management actions and best management practices identified in the Proposed RMP.

Desert Tortoise. Approximately 203,670 acres within the Kane Springs, Mormon Mesa, and Beaver Dam Slope ACECs are unavailable for livestock grazing (see **Maps 2.4.16-1** and **3.7-1**). This would benefit the desert tortoise by eliminating competition with domestic livestock for forage in these areas, thereby providing a greater amount of quality forage for the desert tortoise. As native species gradually become part of the vegetation communities, tortoises would benefit from better quality forage and improved habitat conditions. Improved nutrition could reduce the susceptibility of individual tortoises to diseases, including the Upper Respiratory Tract Disease which currently impacts many wild tortoises in all age classes. The aboveground biomass of perennial grasses and forbs would increase, providing improved thermal and protective cover for hatchlings and juvenile tortoises. With improved cover, juvenile tortoises would be less susceptible to predation. Tortoises and their burrows also would be protected from trampling by livestock

Livestock grazing would continue in 19 allotments within desert tortoise habitat outside of the ACECs (see **Maps 2.4.16-1** and **3.7-1** and **Table 4.7-6**).

Table 4.7-6
Allotments in Desert Tortoise Habitat Available for Livestock Grazing

Allotment Name	Map Unit Number[1]	Total Allotment Public Acres[2]	Acres of Designated Critical Habitat	Approximate Acres of Non-Critical Habitat[3]	Season of Use	Active Animal Unit Months
Beacon	10	NA	607	0	Closed[3]	0
Boulder Spring	22	13,537	0	9,740	10/1 to 3/31	416
Breedlove	23	89,500	41	89,070	3/1 to 2/28	698
Buckhorn	26	82,968	0	2,540	3/1 to 2/28	3,370
Delamar	57	203,000	8,451	30,490	3/1 to 2/28	5,558
Garden Springs	76	38,823	0	22,210	10/1 to 5/31	2,809
Gourd Spring	85	57,700	3,034	50,910	10/1 to 5/31	3,458
Grapevine	86	22,000	1,299	18,700	3/1 to 2/28	349
Henrie Complex	91	165,060	0	87,220	11/1 to 4/30	1,380
Lime Mountain	102	67,144	0	2,790	10/1 to 5/15	6,754
Lower Lake East	106	41,800	2,504	27,350	3/1 to 2/28	640
Lower Lake West	107	57,000	0	5,550	3/1 to 2/28	1,247
Lower Riggs	108	19,569	0	120	5/1 to 3/24	1,408
Mormon Peak	126	64,700	67	12,890	6/1 to 3/31	600
Pahranagat East	143	34,146	0	11,400	8/1 to 5/31	511
Pahranagat West	144	70,138	0	12,000	10/1 to 5/31	2,144
Snow Springs	191	44,042	6,499	37,510	10/1 to 5/15	3,567
Summit Spring	202	18,035	2,738	14,260	10/1 to 5/31	715
Terry[4]	207	30,163	22,030	8,490	11/1 to 5/31	1,511
White Rock	222	32,916	0	24,720	10/1 to 5/31	2,880

[1] Map unit number refers to grazing allotments on **Map 2.4.16-1**.
[2] Not including allotment acreages unavailable for grazing within desert tortoise ACECs.
[3] Rounded to tens.
[4] Southern portion of Terry allotment has a season-of-use of 11/1 to 3/15 (critical desert tortoise habitat).

The Gourd Spring, Henrie Complex, Lower Lake West, and White Rock allotments have been evaluated and are meeting or making progress towards achieving the rangeland health standards. The other 15 allotments will be evaluated to determine if they are meeting or making progress toward meeting the standards for rangeland health.

Allotments or portions of allotments outside of ACECs would be managed according to seasonal utilization limits of 40 percent on key perennial grasses and shrubs (March 15 to October 15), 50 percent on key forbs, perennial grasses, and 45 percent on key shrubs and perennial forbs (October 15 to March 15) of annual growth. This limitation should maintain plant communities at their current seral stage. Direct impacts to the desert tortoise from livestock grazing would include localized vegetation trampling, removal of cover plants due to grazing or browsing, crushing of burrows, injury/mortality from livestock or livestock management activities, and added effects from habitat fragmentation. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality. Possible long-term negative impacts to tortoise, such as trampling and competition for forage, could continue on the 519,713 acres of desert tortoise habitat outside the ACECs. Potential impacts to desert tortoise would be minimized through Section 7 consultation, and implementation of management actions and BLM best management practices.

Plant Species

Ute Ladies'-tresses. This species occurs on private land. Thus, impacts from the Livestock Grazing Program are not anticipated.

Other Sensitive Plant Species on BLM-administered Land. Potential changes to sheep and goat grazing in occupied desert bighorn sheep habitat and associated buffer zone may minimize the potential for physical damage to special status plants and the deterioration of habitat present within these areas in the short and long term.

Geology and Mineral Extraction.

The fluid mineral development potential in the planning are is based on reasonable foreseeable development scenarios for oil and gas and geothermal energy developed in conformance with BLM policy. These analyses are based largely on the reasonable foreseeable development scenarios as presented in detail in the mineral report prepared for the Proposed RMP/Final EIS (ENSR 2004a). Various additional assumptions have been incorporated based on changes in the mineral markets over the past couple of years.

Table 4.7-7 presents a summary of anticipated disturbance from mineral extraction in the planning area. Detailed reasonable foreseeable development scenarios for individual categories of minerals are presented in Section 4.18, Geology and Mineral Extraction.

Table 4.7-7
Summary of Anticipated Disturbance from Mineral Extraction

Type of Mineral Development	Approximate Disturbance Acreage[1]	
	Short-term	Long-term
Fluid Leasable Minerals	8,400	1,400
Solid Leasable Minerals	0	0
Geothermal Development	200	100
Locatable Minerals	7,500	7,500
Mineral Materials	1,000	1,000
Totals Disturbance Acreage	**17,100**	**10,000**

[1] Rounded to hundreds.

Fish Species

Pahrump Poolfish. No historic mining or oil and gas development overlap with the area surrounding Shoshone Ponds. Mining would not affect habitat for Pahrump poolfish because mineral development would be closed in the Shoshone Ponds ACEC. Oil and gas development is not expected to affect these species, although indirect impacts may occur from activities outside the ACEC.

Big Spring Spinedace. Future mining disturbance would not occur in the Condor Canyon habitat for this species because the Condor Canyon ACEC would be closed for mineral development of solid leasable minerals, locatable minerals, and mineral materials. It would be managed as no surface occupancy for fluid leasable minerals. No active oil and gas leases overlap with occupied or designated critical habitat for Big Spring spinedace; therefore, oil and gas development would not affect this species. Since Upper Meadow Valley Wash (Condor Canyon) is located within an area of high potential oil and gas development, this drainage could be affected by construction and operation activities if a lease is approved. Future development activities would have to be done with conditions to protect Big Spring spinedace and its designated critical habitat. Best management practices involving interagency inventory and monitoring and recovery actions would be implemented to minimize impacts to sensitive species in Condor Canyon.

White River Spinedace, Hiko White River Springfish, Pahranagat Roundtail Chub, and Railroad Valley Springfish. No direct impacts would occur to these species since they occur on ponds not administered by the Ely Field Office. Indirect effects (sedimentation) could affect habitats that occur in close proximity to BLM-administered lands open for mineral development. Drilling activities in proximity to these sites potentially could affect habitats through water consumption from these sources or alteration of spring flow if aquifers are disrupted.

White River Springfish. The 80-acre site surrounding Ash Springs is open to fluid leasable mineral development but subject to no surface occupancy constraints. The surrounding area would be closed to development of solid leasable minerals, locatable minerals, and mineral materials. In general, oil and gas and mineral development can affect aquatic habitat by altering riparian vegetation, reducing water levels or flow by water consumption or disruption of the supply aquifer, and degrading water quality from surface disturbance, runoff, and contaminant leaks or spills. However, the 80-acre withdrawal area should be adequate to ensure that development would not affect habitat for White River springfish.

Other Sensitive Aquatic Species on BLM-administered Land. Sensitive fish species occur in upper and lower Meadow Valley Wash (Meadow Valley desert sucker and Meadow Valley Wash speckled dace) and the Goshute Creek drainage (Bonneville cutthroat). Other special status species in upper White River (White River desert sucker, White River speckled dace, relict dace, and springsnails) could be affected by future mining, as discussed for Big Spring spinedace. Mining in areas containing perennial stream segments and springs also could affect other sensitive fish and springsnail species.

Special Status Species on Non-BLM-administered Land. Mining is not expected to occur in areas surrounding occupied and designated critical habitat for the other seven federally listed fish species that occur on non-BLM-administered land. Oil and gas development in high potential areas could disturb

BLM-administered land that is adjacent to private or state land that contains habitat for White River spinedace. Oil and gas development would not affect federally listed Hiko White River springfish, Pahranagat roundtail chub, Railroad Valley springfish, or other special status species, since no high potential areas overlap with habitat for these species.

Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (see Section 4.18, Geology and Mineral Extraction), would be disturbed throughout 11.5 million acres of the planning area. Mineral development activities likely would have localized effects special status species and their habitats. Long-term impacts to special status species would result from the disturbance of wildlife habitat and the added effects from habitat fragmentation in association with oil and gas, geothermal, and metallic and industrial minerals exploration and development. Development of new roads and trails within the planning area would be evaluated for effects on special status species and its habitat on a project-specific basis. Short-term impacts would result from increased noise and human presence. These effects are anticipated to occur incrementally over time and at scattered locations within a large geographic area of the planning area. Potential impacts would include limited mortalities of smaller, less mobile species of wildlife (e.g., small mammals, reptiles, and invertebrates) and the displacement of more mobile species into adjacent habitats. Displacement also could result in some local reductions in special status species populations if adjacent habitats, which may already be populated at carrying capacity, are additionally burdened by this displacement, ultimately contributing to increased mortality. Timing and surface use stipulations in the fluid minerals leasing program would reduce conflicts with special status species in several situations. Mineral development would be evaluated for effects on special status species and their habitat on a case-by-case basis, in accordance with NEPA. Best management practices that would reduce potential impacts to special status species and their habitats are presented in Appendix F, Section 1.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. The majority of Southwestern willow flycatcher and yellow-billed cuckoo habitat within the planning area occurs on lands that are not managed by the BLM (e.g., Pahranagat National Wildlife Refuge, Key Pittman Wildlife Management Area, and private lands) and would not be directly impacted from geology and mineral development activities. Potential impacts from geology and mineral extraction projects (e.g., oil and gas, coal, geothermal resources, and precious and base metal ores) to the habitat for these species on BLM-administered lands (e.g., Lower Meadow Valley Wash) would be dependent on the location and types of the projects. If projects are developed within habitat for the flycatcher and cuckoo, direct impacts could result in the long-term incremental reduction of potential breeding and foraging habitat, and increased habitat fragmentation. Direct impacts also could result in the loss of eggs or young if construction or maintenance activities were to occur during the breeding season. Indirect impacts from noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads could further reduce habitat quality in the vicinity of mineral development projects. Potential impacts to these species and their habitat would be minimized through Section 7 consultation related to specific development projects. Beneficial impacts from the no surface occupancy constraint for fluid mineral development in the 25,000-acre Lower Meadow Valley Wash ACEC and the closure of this area to development of solid leasable minerals, locatable minerals, and mineral materials would include a reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved nesting and foraging habitat, and potential increases in species distribution.

Bald Eagle. No direct or indirect impacts to nesting bald eagles from geology and mineral extraction projects would be anticipated based on the lack of documented bald eagle nest sites within the planning area. Direct impacts to riparian and upland vegetation from mineral development activities could result in the incremental long-term disturbance of foraging or roosting habitat and added effects from habitat fragmentation. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality in the vicinity of recreation areas. Potential impacts to this species and its habitat would be minimized through Section 7 consultation. Beneficial impacts from the closure of the Lower Meadow Valley Wash ACEC to surface activities of mineral development would result in the protection of approximately 300 acres of habitat that could be utilized by bald eagles for foraging and roosting. Protection of the Lower Meadow Valley Wash would result in a reduction in habitat degradation, and increased overall habitat quality, improved roosting and foraging habitat, and potential increases in species distribution.

Desert Tortoise. Potential impacts to the desert tortoise from mineral extraction projects could include the incremental reduction of habitat and increased habitat fragmentation. Indirect impacts from noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads could further reduce habitat quality in the vicinity of development areas. Impacts from construction, operation, and maintenance activities also could result from increased collection opportunities, injury/mortality from vehicles or equipment, and disruption of behavior. Potential impacts to this species and its habitat, including potential predation from predatory birds (e.g., raptors and ravens) would be minimized through additional Section 7 consultation for specific mineral development projects and implementation of management actions.

Beneficial impacts from the closure of approximately 297,100 acres (41 percent) of desert tortoise habitat to development of fluid leasable minerals; closure of approximately 406,500 acres (56 percent) of desert tortoise habitat to development of solid leasable, locatable, and mineral materials (see **Maps 2.4.18-2** and **2.4.18-3**), and the management of mineral material development sites and disposal areas in the desert tortoise ACECs would result in decreased habitat loss and fragmentation, and the elimination of potential collection opportunities, crushing of burrows, injury/mortality from vehicles, and disruption of behavior (see **Table 4.7-8**).

Following designation of the Kane Springs ACEC, approximately 57,190 acres of desert tortoise habitat within the ACEC were withdrawn from mineral entry and closed to mineral entry, to fluid and non-energy mineral leasing, to the operation of the General Mining Law, subject to valid existing rights, and to mineral material disposal. The desert tortoise and its habitat benefit from these closures. The potential for direct mortality, burrow crushing, and habitat loss due to mineral development has been eliminated within this area.

Table 4.7-8
Management of Mineral Development within Desert Tortoise Habitat

Type of Habitat	Acreage	Type of Mineral Management		
		Fluid Leasable	Locatable Minerals	Mineral Materials
Kane Springs ACEC	57,190	Closed	Closed[1]	Closed[1]
Beaver Dam Slope ACEC	36,800	No surface occupancy[2]	Closed[1]	Closed[1]
Mormon Mesa ACEC	108,000	No surface occupancy[2]	Closed[1]	Closed[1]
Critical Habitat Outside ACECs	53,780[3]	Open[4]	Open	Open
Non-critical Habitat Outside ACECs	470,800	Open[4]	Open	Open
Total Acreage[5]	**726,600**			

[1] Closed with exceptions (MIN-16 and MIN-21).

[2] No surface occupancy with exception (MIN-9).

[3] Critical habitat acreage may differ from actual habitat mapped for the same area due to critical habitat designation following legal boundaries (i.e., section lines) while actual habitat boundary is based on topographic elevation.

[4] Open, subject to surface use and/or timing restrictions (MIN-3).

[5] Total acreage contains minor areas of non-habitat within ACECs.

Fluid Leasable Minerals. Fluid mineral exploration and development could continue throughout the Mormon Mesa and Beaver Dam Slope ACECs, but they would be managed as no surface occupancy with exceptions granted upon completion of Section 7 consultation with the U.S. Fish and Wildlife Service. Impacts that could occur from these activities include loss and fragmentation of habitat, direct mortality of tortoises, and increased public access to habitat. By attaching the lease stipulations and conditions, as outlined in Section 2.4.18.2 and additional mitigation measures developed though Section 7 consultation, the impacts to desert tortoise habitat would be reduced to the extent possible.

No habitat disturbance from seismic activities would occur within ACECs, since these activities would be restricted to existing roads and trails. One wildcat well per year would disturb up to 5 acres. Should oil or gas be found, one oil and gas field could occur during the life of the plan, disturbing up to 640 acres.

Outside ACECs, habitat disturbance associated with fluid mineral activities would take place in three phases: exploration, well drilling, and oil field production. It is estimated that 25 to 50 miles per year of seismic lines could occur throughout the planning area with a small portion occurring in desert tortoise habitat outside of ACECs. Mitigation measures outlined in Section 2.4.18.2, along with others developed through Section 7 consultation for specific mineral development proposals, would reduce the impacts to tortoise habitat and reduce the potential for take.

Solid Leasable Minerals. All three desert tortoise ACECs would be closed to solid mineral leasing. Some areas within non-critical desert tortoise habitat outside of the ACECs would remain open to leasing of solid minerals. By applying lease stipulations and conditions outlined in Section 2.4.18.2, BLM best management practices, and mitigation measures developed through Section 7 consultation, impacts to the desert tortoise and its habitat could be reduced to the extent possible. All disturbed areas would be reclaimed to predisturbance conditions as outlined in the Desert Tortoise Recovery Plan.

Locatable Minerals. Exploration and mineral developments would continue throughout the proposed Mormon Mesa and Beaver Dam Slope ACECs on valid existing claims. Negative effects from mineral exploration and development could include direct mortality during mining activities, harassment, incidental take, and the loss and degradation of habitat. By requiring validity examinations of existing claims, plans of operation, NEPA review, and Section 7 consultation for all mineral activities within Mormon Mesa and Beaver Dam Slope ACECs, the potential for these impacts would be mitigated to the extent possible. It has been determined that protection of the desert tortoise and habitat for recovery of the species cannot be accomplished only through mitigation measures in the Kane Springs ACEC as in the Mormon Mesa and Beaver Dam Slope ACECs. This is because the habitat in the Kane Springs ACEC is of higher quality and the population densities are higher than in the other ACECs. Due to these two aspects of the Kane Springs ACEC, it would be very difficult to design a plan of operation that would sufficiently mitigate the impacts to the tortoise and its habitat and still provide for recovery of the desert tortoise. Closure of the Kane Springs ACEC would reduce the potential for further habitat fragmentation in the Northeastern Mojave Recovery Unit, the reserve design of which is already compromised because of the large edge effect (ratio of edge to interior area).

It is anticipated that exploration would continue at a rate of from 8 to 10 activities per year, for all types of locatable minerals within the entire planning area. The operations would consist of small exploration projects that would disturb an estimated 5 acres per project. These could result in up to 50 acres of disturbance per year. It is estimated that one small mining operation would be developed during the life of the plan, with a disturbance of approximately 75 acres in the planning area. This would constitute a minimal loss of desert tortoise habitat within the planning area.

Outside ACECs, the impacts described above for locatable minerals could occur within desert tortoise habitat during exploration under notices for disturbance less than 5 acres. Mitigation would be imposed only through plans of operation when the exploration and development exceeded 5 acres. Plans and notices would prevent undue and unnecessary degradation of desert tortoise habitat.

Mineral Materials. Impacts associated with mineral material disposal include habitat loss, degradation, fragmentation, and the potential for incidental take of tortoise. By closing the ACECs to mineral material disposal (with the exception of 1-mile-wide road corridors for free use and Federal Highway Act material rights-of-way), these impacts would be reduced.

Impacts associated with mineral material disposal, including habitat loss, degradation, fragmentation, and the potential taking of a tortoise would be reduced. It is anticipated that the Nevada Department of Transportation would continue to hold their existing mineral material rights-of-way. The Lincoln County Road Department also may have the need for additional free use permits located in the designated corridor in the ACECs. However, material sites will be restricted to not less than 10-mile separations. Over the life of the plan, it is anticipated that no more than 500 acres of habitat loss would occur from these pits within the proposed ACECs. These would continue to be needed for highway and road maintenance. Mitigation measures outlined in the Proposed RMP, and others developed through Section 7 consultation for specific mineral development proposals, would reduce the impacts to tortoise habitat and the potential for incidental take. These operations would be required to have a “no jeopardy” opinion decision from the U.S. Fish and Wildlife Service.

The majority of the required mineral material pits would be located along Highway 93; the Nevada Department of Transportation would continue to hold 14 material site rights-of-way, with the possibility of three more being developed. The Lincoln County Road Department also may have the need for three free use pits along the Kane Springs and Carp-Elgin roads. However, over the life of the plan it is anticipated that no more than 500 acres of habitat loss would occur from these pits within the proposed ACECs. These would continue to be needed for highway and road maintenance. Mitigation measures outlined in the Proposed RMP, and others developed through Section 7 consultation, would reduce the impacts to tortoise habitat and the potential for incidental take. These operations would be required to have a “no jeopardy” opinion decision from the U.S. Fish and Wildlife Service.

Outside ACECs, the sale of mineral materials to the public would be expected to increase in the future, as population growth continues in the region. Mitigation measures, outlined in Section 2.4.18.2, and those developed though Section 7 consultation related to new materials sites would reduce the impacts to tortoise habitat and the potential for incidental take. It is estimated that one new pit would be established every 5 years to meet public demand, disturbing an estimated 80 acres within desert tortoise habitat over the life of the plan.

Other Sensitive Wildlife Species on BLM-administered Lands. Effects of mineral development on special status wildlife species would be similar to those discussed for the Proposed RMP with various species covered by timing and use stipulations under the fluid minerals leasing program. In relation to other types of mineral development activities, special status wildlife species generally would be protected through project-specific mitigation measures developed as a result of additional NEPA analyses associated with the individual projects at the time they are proposed.

Minerals leasing would continue to be evaluated and mitigated, as needed, on a site-specific basis for the protection of special status plants.

Plant Species

Ute Ladies'-tresses. This species occurs on private land. Thus, impacts from the Geology and Mineral Extraction Program are not anticipated.

Other Sensitive Plant Species on BLM-administered Land. Minerals leasing would continue to be evaluated and mitigated, as needed, on a site-specific basis for the protection of special status plants. Mineral development within the ACECs designated to protect special status plants would be subject to special restrictions and appropriate best management practices. Thus, impacts to the subject plant populations would be minimized.

Fire Management.

In general, fuels management would result in a more widespread treatment (prescribed fire, wildland fire use, mechanical thinning, and herbicide application) in upland areas to achieve vegetation goals and reduce heavy fuel accumulation in comparison to current management. This management approach would result in a reduced risk of catastrophic fires compared to current management. Management actions for fire suppression would be initiated on wildland fires. Activities associated with fire suppression could include the removal of vegetation with hand tools, burning, bulldozers, and other heavy equipment; water removal by engines, portable pumps, or helicopter; and water and slurry drops from helicopters and air tankers. In general, these types of activities would be avoided in the area except during suppression. Following fire, the burned areas would be stabilized and rehabilitated through appropriate treatment actions that could include seedbed preparation (if necessary), seeding, and erosion control measures (e.g., waterbars, contour furrows, and mulching).

Fish Species

Pahrump Poolfish, Big Spring Spinedace, and White River Springfish. The effect of fuels management on aquatic habitat would be reduced erosion input to perennial drainages due to increased soil stability on a long-term basis. In the short-term, there would be a loss of understory and woody debris in drainages, which could result in increased erosion to streams and springs. Restoration of vegetation resilience and return to historical fire regimes would reduce impacts to aquatic habitat when fires occur.

Direct impacts of fire suppression actions could involve reduction in available habitat if water is withdrawn from Shoshone Ponds. Indirect effects could include increased sedimentation from vegetation removal, if the disturbed area is located near or within the runoff or drainage area into Shoshone Ponds, Condor Canyon, or Ash Springs. This temporary increase in sedimentation could reduce habitat quality for fish. Application of emergency stabilization and rehabilitation measures would reduce the potential impacts of wildland fires to aquatic habitats. On a long-term basis, the disturbed area would be reclaimed and sedimentation input to these aquatic habitats would be minimized or eliminated.

Hiko White River Springfish, White River Spinedace, and Pahranagat Roundtail Chub. The effects of fuels management on habitat for Hiko White River springfish, White River spinedace, and Pahranagat roundtail chub would be similar to the types of indirect effects described for Pahrump poolfish, Big Spring spinedace, and White River springfish. Short-term disturbance to soils and vegetation removal on BLM land could result in sediment input to adjacent private land that contains habitat for these species. On a long-term basis, fuels management would minimize sediment input to aquatic habitats as soil becomes more stable and desired vegetation becomes established.

The effects of wildland fire suppression and emergency stabilization and rehabilitation on Hiko White River springfish, White River spinedace, and Pahranagat roundtail chub would be similar to the types of impacts discussed for Pahrump poolfish.

Railroad Valley Springfish. Fire management on BLM-administered land would not likely affect habitat for Railroad Valley, since there are no well-developed drainages connecting the public and private lands containing the springs or stream segments inhabited by this species.

Fire suppression management actions are not expected to affect habitat for Railroad Valley springfish, since there are no well-developed drainages connecting the public and private lands containing the springs or stream segments inhabited by this species.

Emergency stabilization and rehabilitation activities would help to reduce the impacts of wildland fires to aquatic habitat for this species.

Other Special Status Aquatic Species. Effects of fire management and fire suppression activities on other special status species on BLM-administered lands would be similar to those discussed above for Pahrump poolfish. Such impacts generally would be minimal and short-term in nature.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. Fuels management activities would generally occur in the upland areas rather than within suitable habitat for these species. Such activities would result in no direct or indirect effects to these species.

Direct impacts to the Southwestern willow flycatcher and yellow-billed cuckoo from fire suppression could result in the incremental long-term disturbance of breeding and foraging habitat and added effects from habitat fragmentation. Direct impacts also could result in the loss of eggs or young if fire activities were to occur during the breeding season. However, potential long-term impacts would be minimized through Section 7 consultation following any necessary fire suppression activities affecting these species. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality in the vicinity of fire suppression activities. Beneficial effects would include improved ecological health and vegetation resiliency, and a reduction of potential fire events that could affect riparian habitats.

Emergency stabilization and rehabilitation activities would help reduce long-term impacts to affected habitats for these species.

Bald Eagle. Fuels management activities generally would occur in the upland areas rather than within riparian habitats used by this species.

Direct impacts to the bald eagle from fuels management and fire suppression activities could result in the incremental long-term disturbance of roosting and foraging habitat and added effects from habitat fragmentation. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust/smoke effects associated with fire suppression activities and recently burned areas could further reduce habitat quality in the vicinity of fires. Beneficial effects would include improved ecological health and vegetation resiliency, and a reduced potential for future fire events that could affect riparian habitats.

Desert Tortoise. Wildland fires would have the potential to alter desert plant communities and encourage the proliferation of nonnative plant species, especially red brome. Such fires also could destroy forage and cover, as well as cause wildlife mortalities through exposure to smoke and heat. Tortoises would be susceptible to being killed, particularly when caught in the open or in shallow burrows, as a wildland fire moves past them. After a fire, tortoises may experience food shortages and inadequate cover. Individuals may be able to survive a short term forage loss, since tortoises are adapted to food shortages during drought years. The loss of thermal cover may be a more important impact, particularly on sites where rocks are not available. Hatchlings and juvenile tortoises could be more vulnerable to predation as a consequence of reduced cover.

Fuels management involving the use of prescribed fires or other tools consistent with recovery goals and objectives may be implemented to help reduce the re-burn cycle. Many areas burn repeatedly, reducing the potential for desired perennial and shrubs to return. By using prescribed fires on these areas, temporary fire breaks could be designed to reduce future fire size.

Activities associated with fuels management could include the removal of vegetation with hand tools, bulldozers, or other heavy equipment; and water and slurry drops from helicopters and tankers. Direct impacts to the desert tortoise from fuels management could result in the incremental long-term disturbance of desert tortoise habitat and added effects from habitat fragmentation. Impacts also would include direct removal or loss of individuals through burning or removal of habitat, displacement and loss of individuals through escaped fire, and crushing and trampling of individuals and burrows from vehicles and foot traffic. Indirect impacts from increased noise and human presence, dispersal of noxious weeds, and dust effects associated with unpaved roads and trails could further reduce habitat quality. Beneficial effects would include improved ecological health and vegetation resiliency, and a reduction of potential catastrophic fire events that could affect desert tortoise habitat.

Fire suppression activities also could impact desert tortoise and their habitat. These impacts include vehicular crushing of live tortoises and the destruction of nests and burrows. The construction of fire lines also has the potential to destroy nests and burrows. Off-road tracks created by suppression vehicles would be obliterated after the fire under this alternative, thus minimizing the creation of new permanent roads and trails.

Under the Proposed RMP, full fire suppression tactics within desert tortoise habitat would reduce habitat loss. The use of suppression techniques to minimize surface disturbance and restrict off-highway vehicle travel would limit habitat destruction or degradation and reduce the potential for direct mortalities. Education of fire crews about the desert tortoise and its habitat could reduce effects associated with suppression activities. The use of Resource Advisors in the development of suppression tactics would further mitigate impacts to tortoise habitat. Habitat loss would be further minimized by locating fire camps, staging, and helispots outside of the desert tortoise ACECs.

Plant Species

Ute Ladies'-tresses. This species occurs on private land in a moist meadow. BLM's management actions would help protect private lands from fires occurring on public lands. Additionally, the habitat for this species is relatively fire resistant. Thus, impacts from the Fire Management Program are not anticipated.

Noxious and Invasive Weed Management.

Fish Species

Pahrump Poolfish. Noxious and invasive weed management would not affect habitat for the Pahrump poolfish, since no treatment is planned for the area surrounding Shoshone Ponds. This area is not considered to have high potential for weed introduction and dispersal. Expansion of the fenced area to preclude livestock grazing would help prevent the introduction of noxious weeds.

Big Spring Spinedace. Noxious weed management activities could result in varying effects on Big Spring spinedace habitat. The mechanical removal of weeds would result in soil disturbance, which could contribute increased sediment input into Upper Meadow Valley Wash during runoff events. The extent of sediment input would depend upon the location of mechanical disturbance in relation to the stream channel. Increased sediment could alter fish habitat by covering bottom substrates or adversely affecting macroinvertebrate food sources for fish. The duration of sediment-related effects would be considered short-term (i.e., several months to several years until new vegetation is established). The eradication of monotypic tamarisk stands along Upper Meadow Valley Wash would remove a small amount of overhanging cover that provides shade and streamside structure. Most mixed canopy tamarisk along Upper Meadow Valley Wash has already been removed. Removal of tamarisk also could result in localized sediment input into the stream due to reduced bank stability. After new vegetation is established in several years, cover and bank stability would be established along the stream. Tamarisk removal also could result in potential improved water quality and increased water quantity in steams.

White River Springfish. Future weed treatment could occur along the access road and parking area near Ash Springs. Mechanical removal of weeds could result in surface disturbance and short-term sediment input to the spring depending on the extent of the disturbance area and location in relation to Ash Springs. Non-mechanical methods, such as biological treatments, may be used for some weed species to minimize disturbance impacts. Various best management practices (see Appendix F, Section 1) would be implemented as part of noxious weed treatment to minimize or avoid impacts to aquatic species and their habitat.

Hiko White River Springfish, Pahranagat Roundtail Chub, White River Spinedace, and Railroad Valley Springfish. Noxious weed treatment on BLM-administered land would not affect habitat occupied by Hiko White River springfish, Pahranagat roundtail chub, White River spinedace, and Railroad Valley springfish on non-BLM-administered land. When considering the drainage characteristics, no indirect effects involving sedimentation or other water quality changes are expected to affect habitat for these species.

Other Sensitive Aquatic Species on BLM-administered Land. Other special status species in Upper and Lower Meadow Wash and White River Valley (fish and springsnails) could be affected by noxious weed treatment as discussed for Big Spring spinedace and the White River Valley fish species.

Management of invasive and noxious weeds may cause some temporary and localized impacts to special status species as a result of weed eradication techniques (i.e., use of herbicide) within the planning area. With proper application of approved herbicides, impacts to species would not be expected to cause population level effects. Various other types of treatment methods, such as biological, also may be used to minimize effects on non-target species. Best management practices developed to reduce potential impacts with special status species are presented in Appendix F, Section 1. Treatments designed to decrease or eliminate noxious weeds would benefit special status species habitats by reducing or eliminating the chances for dominance of plant species with limited forage or cover values. Noxious and invasive weed treatments would continue to be evaluated and mitigated on a site-specific basis for the protection of special status plant species.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. The majority of habitat used by these species within the planning area occurs on lands that are not managed by the BLM (e.g., Pahranagat National Wildlife Refuge, Key Pittman Wildlife Management Area, and private lands) and would not be impacted from noxious and invasive weed management. Activities associated with the treatment of noxious and invasive weeds on BLM-administered lands with potential Southwestern willow flycatcher and yellow-billed cuckoo habitat (e.g., Lower Meadow Valley Wash) would include application of herbicides, clearing or cutting vegetation by hand or machinery (e.g., chainsaw), and the use of off-highway vehicles or trucks. Potential impacts to these species from weed management activities could result in the long-term incremental reduction of potential breeding and foraging riparian habitat (i.e., tamarisk stands). Direct impacts also could result in the loss of eggs or young if weed management activities were to occur during the breeding season. Indirect impacts from noise and human presence could further reduce habitat quality in the vicinity of weed management activities in the short term. Potential impacts to this species and its habitat would be minimized through Section 7 consultation and the implementation of BLM best management practices. Beneficial effects would include a reduction in habitat degradation and noxious and invasive species, and increased habitat quality with the reestablishment of native riparian species (e.g., willow).

Bald Eagle. Activities associated with the treatment of noxious and invasive weeds would include application of herbicides, clearing or cutting vegetation by hand or machinery (e.g., chainsaw), and the use of off-highway vehicles or trucks. Potential impacts to the bald eagle from weed management could result in the disturbance of roosting and foraging habitat during these activities. Potential impacts to this species and its habitat would be minimized through implementation of BLM best management practices. Weed control measures would generally improve habitat conditions over the long term.

Desert Tortoise. Activities associated with the treatment of noxious and invasive weeds would include application of herbicides, clearing or cutting vegetation by hand or machinery (e.g., chainsaw), and the use of off-highway vehicles or trucks. Potential impacts to the desert tortoise from weed management could result in the unintentional removal or destruction of individuals or habitat, loss of cover or food source, harassment, crushing of burrows, and injury or mortality of individuals from vehicles or machinery. Indirect impacts from noise and human presence could further reduce habitat quality in the vicinity of weed management activities in the short term. Potential impacts to this species and its habitat would be minimized through Section 7 consultation and the implementation of BLM best management practices. Beneficial effects would include a reduction in habitat degradation and noxious and invasive species, and increased habitat quality.

Plant Species

Ute Ladies'-tresses. This species occurs on private land. BLM's management actions would help ensure that the agency's weed control activities do not adversely affect vegetation on neighboring private lands. Thus, impacts from the Noxious and Invasive Weeds Program are not anticipated.

Special Designations.

Fish Species

Pahrump Poolfish. A new ACEC (Shoshone Ponds) consisting of 1,240 acres would be implemented in the Shoshone Ponds (see **Map 2.4.22-1**) for the protection of this species. Management actions for mineral development, fuelwood cutting, and renewable energy would be closed, which would eliminate future impacts on habitat from these activities. Limited off-highway vehicle, road maintenance, fire management, transportation, and livestock grazing management activities would occur within this new ACEC. In the short term (1 to 5 years), habitat characteristics would be the same as present conditions. It is anticipated that it would take at least 5 to 10 years before habitat conditions would improve for Pahrump poolfish. There would be no negative effects related to the ACEC designation.

Big Spring Spinedace. A new ACEC (Condor Canyon) 4,500 acres would be implemented in the area surrounding the portion of Upper Meadow Valley Wash inhabited by Big Spring spinedace (see **Map 2.4.22-1**). The ACEC would be established for the protection of this species and its designated critical habitat. Management actions for mineral development and renewable energy would be closed, which would eliminate future impacts on habitat from these activities. Limited off-highway vehicle, road maintenance, fire management, transportation, and livestock grazing management activities would occur within this new ACEC. Potential beneficial effects to habitat for the Big Spring spinedace would occur in at least 5 to 10 years after the restoration is implemented. There would be no negative effects related to the ACEC designation.

White River Springfish. No new ACECs would be implemented for the area surrounding Ash Springs. Therefore, this program would not affect habitat for White River springfish.

Hiko White River Springfish, Pahranagat Roundtail Chub, and Railroad Valley Springfish. No new ACECs would be implemented for the area surrounding Hiko Spring, Crystal Spring, Pahranagat Creek, or the Duckwater area. Therefore, this program would not affect habitat for the Hiko White River springfish, Pahranagat roundtail chub, and Railroad Valley springfish.

White River Spinedace. A new ACEC (White River Valley) consisting of 13,100 acres in four parcels would be implemented near the White River (see **Map 2.4.22-1**). However, the ACEC locations are at least 1.5 miles from the river, which means that ACEC management activities would not directly affect habitat occupied by White River spinedace on non-BLM administered land. There would be no negative effects related to the ACEC designation.

Other Sensitive Aquatic Species on BLM-administered Land. Designation of the Lower Meadow Valley Wash ACEC would help improve habitat in the long term for Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace. The recovery and conservation actions identified in the southwestern willow flycatcher would serve as a major influence in the management of this ACEC. It is anticipated that it would take at least 5 to 10 years before habitat conditions would improve for these species. Designation of a new White River Valley ACEC would not result in habitat improvements for White River desert sucker, White River speckled dace, and relict dace, since the ACEC would be located in upland areas at least 1.5 miles from the White River. Designations of new ACECs also would improve habitat for other special status wildlife species that occur within these areas.

Wildlife Species

Southwestern Willow Flycatcher and Yellow-billed Cuckoo. A new ACEC encompassing approximately 25,000 acres (Lower Meadow Valley Wash) would be implemented in the Lower Meadow Valley Wash drainage for the protection of several special status species including the Southwestern willow flycatcher and yellow-billed cuckoo (see **Map 2.4.22-1**). This ACEC includes approximately 300 acres of Southwestern willow flycatcher habitat and approximately 340 acres of yellow-billed cuckoo habitat. Habitats for the two species generally are similar and overlapping. Management actions for the ACEC include closure for plant collecting, locatable mineral development, mineral materials development, fuelwood cutting, and renewable energy, which would eliminate future impacts on habitat from these activities. Leasable mineral development would be subject to the no-surface-occupancy stipulation. The area would be an avoidance area for rights-of-way, no new roads would be developed, and the area would not be available for disposal. Off-highway vehicle use, road maintenance, fire management, and livestock grazing within the area would be limited. No negative direct or indirect impacts to the southwestern willow flycatcher and yellow-billed cuckoo would occur from the designation of ACECs on the planning area. Beneficial effects would result from the exclusion or reduction of management actions (e.g., livestock grazing, off-highway vehicle use, mineral extraction, etc.) that otherwise would be permitted. As a result, effects to potential habitat for these species (i.e., riparian/wetland) within designated ACECs would include long term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved nesting and foraging habitat, and potential increases in species distribution.

Designation of the Rainbow Canyon and Silver State Trail as back country byway (see **Map 2.4.22-2**) would likely increase visitor used of this trail and may increase the level of human activity within potential habitat along Meadow Valley Wash. These activities are expected to have little effect on the species.

Bald Eagle. No negative direct or indirect impacts to the bald eagle would occur from the designation of ACECs in the planning area. Beneficial effects would result from the exclusion or reduction of management actions (e.g., livestock grazing, off-highway vehicle use, mineral extraction, etc.) that would be permitted. As a result, effects to potential bald eagle habitat (i.e., riparian/wetland) within several designated ACECs containing riparian or wetland habitat (e.g., Lower Meadow Valley Wash, Shoshone Ponds, Swamp Cedar, and Condor Canyon) would include long term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved foraging habitat, and potential increases in species distribution.

Desert Tortoise. Redesignation of the three existing desert tortoise ACECs would directly benefit the threatened desert tortoise, assisting the recovery and delisting of the species in the Northeastern Mojave Recovery Unit. The three existing ACECs (Beaver Dam Slope – 36,800 acres; Kane Springs – 57,190 acres; and Mormon Mesa – 109,680 acres) would be retained and redesignated for the protection of desert tortoise (see **Map 2.4.22-1**). Management plans would be developed for these three ACECs to address and implement multiple-use management actions and conservation measures for desert tortoise. No negative direct or indirect impacts to the desert tortoise would occur from the retention of these ACECs in the planning area. Beneficial effects would result from the exclusion or reduction of management actions (e.g., additional rights-of-way, off-highway vehicle use, mineral extraction, land disposal, livestock grazing, renewable energy development, etc.) that otherwise would be permitted. As a result, effects to potential desert tortoise habitat within designated ACECs would include long term reduction in erosion, habitat degradation, and noxious and invasive species; and increased habitat quality, improved foraging habitat, and potential increases in species distribution. The effects of those various management prescriptions associated with designation of the ACECs are discussed in greater detail in the individual resource management programs.

Plant Species

Ute Ladies'-tresses. The only known population of this species in the planning area occurs on private land near Panaca Spring. Thus, no direct or indirect impacts to known populations of Ute ladies'-tresses are anticipated to result from this or other resource management programs within the Proposed RMP.

Other Sensitive Plant Species on BLM-administered Land. Three new ACECs totaling approximately 24,900 acres would be established primarily for the protection of special status plants. The establishment of these ACECs and the land use restrictions associated with these ACECs would have a positive effect on known and potential habitat for special status plants in these areas. These ACECs and the associated special status plant species occurring within them are as follows:

- Schlesser Pincushion ACEC
  - Schlesser pincushion cactus (*Sclerocactus schlesseri*)

- White River Valley ACEC
  - Sunnyside green gentian (*Frasera gypsicola*)
  - Eastwood milkweed (*Asclepias eastwoodiana*)
  - White River catseye (*Cryptantha welshii*)
  - Tiehm blazingstar (*Mentzelia tiehmii*)
  - Parish phacelia (*Phacelia parishii*)
  - Charleston grounddaisy (*Townsendia jonesii* var. *tumulosa*)

- Highland Range ACEC
  - Basin waxflower (*Jamesia tetrapetala*)

In addition to these three ACECs established in relation to the species shown, establishment of the Condor Canyon ACEC may provide benefit to the Ute ladies' tresses orchid, since the species could occur within that area.

Conclusion. Sensitive fish and invertebrate species would be managed through evaluations of their overall habitat conditions. Numerous resource uses could affect sensitive aquatic habitat as a result of sedimentation, vegetation removal, or habitat alteration. Changes in grazing management and restoration efforts in riparian areas could improve habitat conditions in the long-term, particularly in Lower Meadow Valley Wash ACEC and Condor Canyon ACEC. Vegetation management could result in greater short-term impacts through erosion and sedimentation as a result of increased treatment areas. On a long-term basis, the restoration of vegetation resilience in riparian areas and the surrounding uplands would improve habitat conditions for sensitive fish and invertebrate species. By implementing the various management actions associated with the special status species management direction and mitigation actions associated with other programs, the goals and objectives for special status aquatic species would be achieved.

Special status wildlife species would be specifically assessed, based on species-specific desired future conditions, and compared to overall habitat conditions and identification of causal factors for declines. On a watershed level, restoration activities would result in higher quality forage, increased cover and vegetation structure, and increased habitat quality for special status species. On a landscape level, restoration activities to achieve appropriate ranges of vegetation conditions would improve special status species habitats by reducing habitat degradation and fragmentation, and promoting ecological health and resiliency. The Proposed RMP would achieve the program goal for special status wildlife species.

A detailed analysis of potential impacts to special status plants would be completed in conjunction with each watershed and habitat analysis. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis. Three new ACECs would be established primarily for the protection of special status plants. The establishment of these ACECs and the land use restrictions associated with them may offer additional protection where special status plants occur in these areas. Therefore, implementation of the Proposed RMP would result in additional protection for special status plants and achieve the program goal relative to such species.

Alternative A

Impacts from Special Status Species Management Actions.

Parameter – Special Status Species Habitat

Management actions for federally listed species are mandated to comply with Section 7 of the Endangered Species Act. This requirement is reflected in the management direction and standard operating procedures. Compliance with the Endangered Species Act requires that any direct or indirect impacts on federally listed species do not jeopardize the species or their designated critical habitat.

Management of listed fish species would continue to be focused on maintenance or enhancement of designated critical habitats on BLM-administered public land, which involves three species (Big Spring spinedace, Pahrump poolfish, and White River springfish). Habitat for other sensitive (non-listed) fish species also would be maintained or enhanced.

Numerous management actions applicable to all alternatives would be implemented to minimize or eliminate impacts to special status fish species (Section 2.5.7, Special Status Species). A key management action for all species would involve the Ely Field Office's participation in the Nevada Department of Wildlife Interagency Implementation Teams to identify and implement actions for the recovery of listed fish species in the planning area.

Management of special status wildlife species would continue to occur predominantly at a fine scale (i.e., allotment, project, or portion of a watershed) and occasionally at the large scale (i.e., planning area) through management actions that address an immediate need or habitat niche for the maintenance, mitigation, and restoration of a single special status species on a case-by-case basis. Implementation of this alternative would include restoration activities that would be managed to achieve desired range of conditions for vegetation communities (see Section 2.5.5, Vegetation Resources). The historic restoration rate of approximately 10,000 acres per year is not considered an adequate rate of habitat restoration, given the historic trends in habitat degradation, fragmentation, and spread of invasive vegetation species that have occurred on the planning area. With continued deterioration of these communities and resultant loss of habitat for several special status species, particularly those that inhabit sagebrush and salt desert shrub communities, the probability continues to increase for additional listing of such species under the Endangered Species Act. Listing of one or more species within this complex of sensitive species easily could impose major constraints on other multiple uses within the planning area.

Under this alternative, cave roosting habitat for bats would receive protection from other program activities (e.g., recreation) through implementation of the Ely Field Office Cave Management Plan and by restricting actions and activities that could impact sensitive roost areas (e.g., hibernaculum, maternity roost, and bachelor roosts) on the planning area. Protection of other roosting habitat (e.g., rock outcrops and vegetation) and restoration projects to promote or restore foraging habitats (e.g., riparian and pinyon-juniper) would not be a priority under this alternative. As a result, degradation of foraging and some roosting habitat for bat species would continue.

Special status plants would be addressed on a case-by-case basis. Recovery of species and historic habitats would continue to be affected due to lack of occurrence information. A more detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis.

Parameter – Great Basin Riparian Habitat

Management of listed fish species would continue to be focused on maintenance or enhancement of designated critical habitats on BLM-administered public land, which involves two species within this habitat (Big Spring spinedace and Pahrump poolfish). Habitat for other sensitive (non-listed) fish species also would be maintained or enhanced. Habitat projects would be implemented on a case-by-case basis.

Specific management actions also would affect Pahrump poolfish under Alternative A. Existing fencing around the Shoshone Ponds would continue to provide some protection to surface disturbance to adjacent lands and habitat for Pahrump poolfish. However, the fencing is not totally effective in eliminating human and livestock access or run-off from adjacent upland areas.

Although a historic population of Ute ladies'-tresses orchid was observed near Panaca Spring in Meadow Valley Wash in 1936, this population was not observed again nor were other populations observed in the planning area until 2005. At that time, the original population was rediscovered. No active management for this species is currently conducted by the Ely Field Office. Pre-construction review of proposed projects and disturbances requiring NEPA review would continue to be the primary means of avoiding potential impacts to known or potential habitat for the Ute ladies'-tresses orchid and other special status plant species. If additional unknown populations of Ute ladies'-tresses exist on public lands, the current management approach would not protect such populations from potential conflicts with resource uses not requiring NEPA review.

Parameter – Mojave Desert and Great Basin Riparian Habitats

Under Alternative A, the Lower Meadow Valley Wash area would not be designated as an ACEC for protection of special status species within this riparian habitat. Thus, impacts to the Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace from livestock grazing and other uses would continue. Similarly, the Condor Canyon area would not be designated as an ACEC for protection of the Big Spring spinedace.

Within riparian habitats of the Mojave Desert and Great Basin ecological systems, conflicts would continue to result in short-term localized habitat disturbance from habitat restoration projects and the incremental reduction of potentially suitable habitat for species that utilize tamarisk (e.g., southwestern willow flycatcher, yellow-billed cuckoo, Arizona southwestern toad). Implementation of standard operating procedures that would minimize or prevent potential impacts to special status species are present in Appendix J of the Draft Ely RMP/EIS (July 2005). In addition, since no special use restrictions or utilization levels, above BLM general standards and policy, have been established for Meadow Valley Wash, effects from grazing would continue to result in a reduction in herbaceous and shrub cover and overall nesting and foraging structure for special status species that utilize riparian habitat.

Parameter – Mojave Desert Riparian Habitat

Management of listed fish species would continue to be focused on maintenance or enhancement of designated critical habitats on BLM-administered public land, which involves one species in this habitat (White River springfish). Habitat projects would be implemented on a case-by-case basis for this and other aquatic species. In the riparian habitats of the White River/Pahranagat Valley, adjacent public lands would be managed so that indirect effects would not occur for White River springfish, Hiko White River springfish, or Pahranagat roundtail chub. Management actions identified in the recovery plans (see **Table 3.7-3**) would continue to be implemented.

Specific management actions would be implemented for White River springfish habitats in Ash Springs, as identified in the Ash Spring Coordinated Management Plan. These actions would involve the 72-acre administrative withdrawal of Ash Springs from future land sales and development. Mitigation and monitoring identified in previous Section 7 consultations for this species would continue to be used. Management actions also would be implemented to minimize indirect effects on fish species that occur in adjacent lands (Virgin River, Muddy River, White River Valley, and Pahranagat Valley) to the planning area (see Section 2.5.7, Special Status Species).

Parameter – Mojave Desert Scrub Habitat

Under this alternative, special status species in the Mojave Desert ecological system would continue to experience watershed level effects from increased displacement by red brome and other invasive species, and a reduction of native herbaceous understory. However, special status species in the Mojave Desert ecological system would continue to benefit from the exclusion of livestock grazing within designated desert tortoise ACECs (approximately 203,670 acres) and special use restrictions that have been developed for desert tortoise habitat outside the ACECs. This management direction would provide higher quality forage (i.e., grasses and forbs) and cover within these areas. Implementation of standard operating procedures that would further reduce potential impacts to desert tortoise are presented in Appendix J of the Draft Ely RMP/EIS (July 2005).

Parameter – Mojave and Great Basin Desert Scrub and Salt Desert Shrub Habitats

Under this alternative, no habitat analyses, systematic breeding surveys, or proactive actions to promote habitat conditions for the burrowing owl or other desert scrub or salt desert shrub dependent special status species would occur. As a result, habitat for special status species within desert scrub or salt desert shrub communities would continue to be affected primarily by management of other uses such as livestock grazing, fire management, and recreation.

Parameter – Great Basin Sagebrush Habitat

Within sagebrush habitats of the Great Basin ecological system, watershed level effects would continue to result in the reduction in available herbaceous forage, cover, and shrub structure for sagebrush-dependent special status species (e.g., greater sage-grouse and pygmy rabbit) in the long term. Landscape level effects would continue to result from general habitat degradation, habitat fragmentation, and a reduction in ecological health and resiliency.

Impacts from Other Programs. Effects to special status species associated with forest/woodland and other plant products and noxious and invasive weed management would be the same as described for the Proposed RMP. The following interrelated programs would result in different effects as compared to the Proposed RMP.

Water Resources. Effects related to this program would be the same as the Proposed RMP. Actions of this program would focus on restoration and maintenance of water quality on these lands. Additional best management practices impose constraints on various types of uses to ensure that water quality is maintained. If these actions propose to use water sources that affect surface water quantity, reductions in flow or water levels could adversely affect habitat for special status species. These actions would be addressed on a case-by-case basis when specific water uses are identified.

Vegetation.

Big Spring Spinedace, Pahrump Poolfish, and White River Springfish. If future vegetation treatment (e.g., prescribed fire or chaining) is applied to Upper Meadow Valley Wash (Condor Canyon) or the area surrounding the Shoshone Ponds and Ash Springs, activities would be completed using standard operating procedures and best management practices to minimize any sediment input to the water bodies.

Other Special Status Aquatic Species on BLM-administered Land. Potential impacts to other special status fish species (Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, White River desert sucker, White River speckled dace, relict dace, and Bonneville cutthroat trout) and sensitive invertebrates (e.g., springsnails) would be similar to those described for the Big Spring spinedace. However, vegetation management actions for Meadow Valley Wash desert sucker and Meadow Valley speckled dace would apply to occupied habitat in both Upper Meadow Valley Wash and Lower Meadow Valley Wash. The lower portion of Meadow Valley Wash is defined as the Clover Creek confluence (near Barclay) to the Clark County line (south of Rox).

Special Status Aquatic Species on Non-BLM-administered Land. Vegetation treatment in the planning area would not affect areas occupied by seven federally listed and other special status species on non-BLM-administered land. When considering the drainage characteristics, no indirect effects involving sedimentation or other water quality changes are expected to affect habitat used by these species.

Treatment and maintenance activities would occur primarily in pinyon-juniper and sagebrush communities although less extensive treatments, as compared to the Proposed RMP, would occur within each of the

Great Basin vegetation types. Although the effects on special status species from restoration activities (i.e., removal or thinning of woodland and shrubland) would be similar to those discussed for the Proposed RMP, the levels of treatment within various vegetation communities under Alternative A are not expected to keep up with the ongoing decline of ecological health in these same communities. Thus, vegetation communities would continue to exhibit transitions that affect wildlife habitat (e.g., conifer invasion of aspen stands and establishment of pinyon and juniper trees in sagebrush shrubland), increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs) in untreated areas. Although localized restoration activities to achieve the desired range of conditions generally would improve habitats for special status species in these areas, habitat quality would continue to decline at the landscape scale with associated increase in the risk for additional listings under the Endangered Species Act.

Management of the Mojave Desert ecological system would be similar to the Proposed RMP except that this alternative would focus on maintaining or improving vegetation health and resiliency through management of various uses (e.g., livestock grazing, recreation, and wild horse herds) and the localized treatment of noxious weeds and exotic woody species (e.g., red brome and tamarisk). Although localized restoration activities would benefit special status species by increasing herbaceous forage and ground cover in the short term, and improving vegetation composition and structure in the long term, the levels of treatment under this alternative are not expected to keep pace with the ongoing spread of invasive species. Thus, landscape level effects would continue to result in increased habitat degradation and a reduction in overall habitat quality in the long term.

Some of the vegetation management programs that may result in positive effects to potential or known habitats for the Ute ladies'-tresses orchid include the maintenance of current riparian vegetation species and improvement of riparian vegetation towards proper functioning condition. Restoration actions (e.g., prescribed fire, reseeding) within specific habitats would be evaluated on a site-specific basis to avoid or minimize potential impacts to special status plants.

Fish and Wildlife.

Big Spring Spinedace. Habitat management for nonnative trout species in Upper Meadow Valley Wash and Clover Creek do not overlap with designated critical habitat for Big Spring spinedace. Therefore, management actions for trout would not affect Big Spring spinedace.

Pahrump Poolfish, and White River Springfish. Habitat management for nonnative trout species would not conflict with occupied or designated critical habitat for these species. Nonnative trout do not occur in Shoshone Ponds or Ash Springs.

Other Sensitive Species on BLM-administered Land. The management of nonnative trout species could result in conflicts with other sensitive aquatic species in terms of competition for food, cover, spawning areas, and other ecological requirements. Conflicts would be addressed on a case-by-case basis for a specific water body.

The management of fish and wildlife would result in the same general effects as discussed above for the Proposed RMP, except fewer acres of habitat would be treated in the long term. The management of fish and wildlife would result in conflicts with some special status species, particularly those that occupy dense pinyon juniper and sagebrush vegetation communities. However, potential impacts are expected to be short term. Long term effects would improve ecological health and habitat quality for special status species.

Special riparian use restrictions or limitations that may be implemented on a case-by-case basis to protect fisheries would avoid or minimize effects to potential habitat for the Ute ladies'-tresses orchid in the long term.

Wild Horses.

Big Spring Spinedace. Occupied and designated critical habitat for Big Spring spinedace is located adjacent to the Deer Lodge Canyon Herd Management Area, which has an appropriate management level of 30 to 50 horses. Although horse use would not occur within the stream channel, surface disturbance would occur in the area south of Upper Meadow Valley. Sediment could enter the stream during runoff periods.

Pahrump Poolfish and White River Springfish. No wild horse herd management areas currently exist within the Shoshone Pond Resource Area or Ash Springs, which contain occupied and designated critical habitat for these species. Therefore, wild horses would not affect these species.

Other Sensitive Species on BLM-administered Land. Potential impacts to other special status fish species occurring in Upper and Lower Meadow Valley Wash (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace) would be the same as described for the Big Spring spinedace. Sediment-related impacts to springsnail habitats also could occur as a result of horse use of areas surrounding springs in other herd management areas.

Special Status Species on Non-BLM-administered Land. Wild horse herd management areas would not affect areas occupied by the six federally listed species that occur on adjacent non-BLM-administered land.

Wild horses would have the same general effects on special status wildlife species as described under the Proposed RMP, except that 24 herd management areas would be retained and approximately 1.6 million more acres would be available for wild horses.

Effects of wild horse management on special status plant species would be similar to the Proposed RMP except continued grazing of vegetation by wild horses in all existing herd management areas may result in greater damage to known or potential habitat for Ute ladies'-tresses orchid or other special status plants.

Lands and Realty. No identified disposal areas include known populations of special status aquatic species, but a variety of identified potential disposal areas are in close proximity to such populations (approximately 1,100 feet). The management approach under Alternative A specifies that lands would be retained if actions would result in a listing of sensitive species or affect designated critical habitat for federally listed species. Possible land disposals and acquisitions potentially could result in impacts depending upon the land use actions. Potential impacts could include changes in water quality and quantity or direct alteration of habitat. Beneficial effects could result from land transactions that provide conservation easement or other actions that protect the species. Future transactions would be analyzed on a site-specific basis. Compliance with the Endangered Species Act would require that actions would not jeopardize the continued existence of the species or its designated critical habitat.

Under this alternative, approximately 31,900 acres of land would be available for possible land disposal. Potential land disposals would be more limited than the Proposed RMP and, thus, would have less impact on special status species. Utility right-of-way management would result in the same general effects to special status species as described for the Proposed RMP. Development of newly proposed utility projects and communication sites would be evaluated for effects on special status species and special status species habitat, on a case-by-case basis, in accordance with NEPA. Conflicts with land use authorizations would be expected to result in the long-term reduction of wildlife habitat and increased effects from habitat fragmentation. Development of new land use authorization facilities would be evaluated for effects on special status species, in accordance with NEPA. Standard operating procedures and best management practices that would reduce potential impacts of land and realty actions to special status species are presented in Appendix N of the Draft Ely RMP/EIS (July 2005).

Potential land disposals and acquisitions would continue to be evaluated and mitigated, as needed, on a site-specific, case-by-case basis to minimize potential impacts to special status plants. Proposed expansion of existing designated corridors and land and realty actions would be evaluated under NEPA prior to implementation. Potential impacts to special status plants would be addressed in those analyses.

Renewable Energy. Under Alternative A, proposed wind energy and solar energy development projects would be reviewed by the Ely Field Office on a case-by-case basis. Conflicts with special status species would be the same as discussed for the Proposed RMP,

Travel Management and Off-highway Vehicle Use.

Big Spring Spinedace, Pahrump Poolfish, and White River Springfish. Use of existing and new transportation corridors could result in short-term, localized sediment input to perennial stream segments. The primary mechanism for sediment effects would involve off-highway vehicle use adjacent to or within stream channels. Soil disturbance from vehicle use could result in sediment runoff from roads into adjacent streams. The construction of new roads near streams could result in sediment input due to surface disturbance. By implementing required erosion control measures during construction, sediment impacts to streams would be minimal.

Other Sensitive Species on BLM-administered Land. Potential impacts to other special status fish species occurring in Upper and Lower Meadow Valley Wash (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace) would be the same as described for Big Spring spinedace (Upper Meadow Valley Wash). Sediment-related impacts also could occur in the Clover Creek drainage, which contains habitat for Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace. Activities include maintenance of the Union Pacific Railroad rights-of-way and off-highway vehicle use. Other special status species that could be affected by transportation include White River desert sucker, White River speckled dace, and relict dace (White River) and springsnails.

Special Status Species on Non-BLM-administered Land. Road use on BLM-administered land would not affect areas occupied by seven federally listed species that occur on adjacent non-BLM-administered land.

Travel management and off-highway vehicle use would have the same general effects on special status wildlife species as the Proposed RMP; however, approximately 9.8 million acres would remain open to off-highway vehicle use. Impacts to wildlife from increased noise and human presence would be much more widespread and potentially much more disruptive, as compared to the other alternatives. Development of new trails by off-highway vehicle use within these open areas would result in increased habitat degradation and fragmentation.

New road construction would continue to be evaluated and mitigated, as needed, on a site-specific, case-by-case basis to minimize potential impacts to special status plants. Potential impacts (e.g., trampling of vegetation, soil disturbances) to known and potential habitat for the Ute ladies'-tresses orchid or other special status plants may occur on 9.8 million acres open to off-highway vehicle use and adjacent areas as a result of trespass use.

Recreation.

Big Spring Spinedace and Pahrump Poolfish. Recreation activities under Alternative A could result in vehicle traffic and hiking near Condor Canyon in Upper Meadow Valley Wash and Shoshone Ponds. Vehicle use could result in some erosion along existing roads and trails. It is not expected that these activities would contribute sediment, since they are located at least 500 feet from the waterbodies. In addition, management direction to be defined in the Condor Canyon and Shoshone Pond ACECs would not allow activities that could affect habitat for these federally listed species.

White River Springfish. Recreation activities in the Ash Springs area include swimming, picnic use, and hiking. Effects of these activities on habitat for White River springfish could include sedimentation, bottom disturbance, and direct alteration of the shoreline area. No new special recreation management areas would be implemented under Alternative A, which would avoid sediment-related impacts associated with the Pahranagat Special Recreation Management Area.

Other Sensitive Species on BLM-administered Land. Potential impacts to other special status fish species occurring in Upper and Lower Meadow Valley Wash and Clover Creek (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace) would be similar to other sensitive fish species. Other special status species that could be affected by recreation include White River Wash desert sucker and relict dace (White River) and springsnails.

Special Status Species on Non-BLM-administered Land. Recreation activities on BLM-administered land would not affect areas occupied by seven federally listed species that occur on adjacent non-BLM-administered land.

Recreation activities would have the same general effects on special status wildlife species as the Proposed RMP. Organized race events would continue under the current permitting system and would affect wildlife as described under the Proposed RMP.

Livestock Grazing.

Big Spring Spinedace. No special use restrictions or utilization levels, above BLM general standards and policy, would be established in Upper Meadow Valley Wash. Meadow Valley Wash is located in three grazing allotments (Black Hills, Condor Canyon, and N4/N5). The effects of grazing activities on Big Spring spinedace habitat could include direct alteration to bottom substrate, increased sedimentation, and loss of riparian vegetation. To minimize these types of impacts to Meadow Valley Wash, the BLM prepared the Condor Canyon Habitat Management Plan in 1990. The plan was designed to maintain or improve habitat conditions for this species. The plan recommended excluding livestock grazing within the Canyon between March 15 and November 15, limiting casual vehicle use to the railroad bed, and prohibiting organized competitive or non-competitive vehicle events. The change in livestock grazing season has not been implemented but will be considered when the allotments are evaluated.

Pahrump Poolfish. No cattle grazing currently exists within Shoshone Ponds, which contains occupied habitat for this species. The Ely Field Office has fenced the area around the ponds to restrict grazing. Therefore, livestock grazing would not affect Pahrump poolfish.

White River Springfish. No cattle grazing currently exists on BLM-administered land in the vicinity of Ash Springs. Therefore, cattle grazing would not affect this species.

Other Sensitive Species on BLM-administered Land. Potential impacts to other special status fish species occurring in Upper and Lower Meadow Valley Wash (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace) would involve potential sedimentation effects on Meadow Valley Wash during the grazing periods. In Lower Meadow Valley Wash, grazing would occur outside of the southwestern willow flycatcher breeding period. Other special status species that could be adversely affected by grazing include the White River desert sucker and relict dace (White River), Bonneville cutthroat trout (Hampton and Goshute Creeks), Newark Valley tui chub, and springsnails.

Special Status Species on Non-BLM-administered Land. Cattle grazing would not affect areas occupied by six federally listed species that occur on adjacent non-BLM-administered land.

Livestock grazing would continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing will be maintained for

120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use will be made as needed to meet or progress toward achievement of the standards. These actions would lessen the impacts to the resource.

Effects to special status wildlife species from livestock grazing would be similar to those described for the Proposed RMP, except that under Alternative A, livestock utilization levels and special use restriction would continue to be implemented through existing framework plans and site-specific activity plans. As a result, special status species conflicts with livestock grazing could continue to result from competition for forage, cover, and water resources in isolated situations throughout the planning area. On a landscape scale, livestock grazing would continue to affect habitat quality for special status species and, in some cases, may limit such populations.

Current grazing practices are not expected to cause deterioration of known and potential habitat for the Ute ladies'-tresses orchid or other special status plants. Grazing management practices and on-going effects would continue to be evaluated and mitigated, as needed, on a site-specific, case-by-case basis to minimize potential impacts to special status plants.

Forest/Woodland and Other Plant Products.

Big Spring Spinedace. Since Upper Meadow Valley Wash does not occur within an evergreen forest area, impacts associated with wood product harvest would be considered relatively low level magnitude. However, tree cutting has occurred in the area, particularly after the railroad tracks were removed in 1984 (U.S. Fish and Wildlife Service 1993). Therefore, impacts of tree removal could occur in the future. The types of impacts could include increased erosion, fuel spill risks, and removal of riparian vegetation. It is assumed that activities would not occur within the perennial stream channels to directly alter habitat. The magnitude of potential impacts would depend upon the proximity to the perennial stream, extent of surface disturbance, and drainage characteristics (e.g., gradient and extent of vegetation cover).

Pahrump Poolfish and White River Springfish. No wood harvests are allowed within Shoshone Ponds or Ash Springs. Therefore, wood product harvest would not affect these species.

Other Sensitive Species on BLM-administered Land. Potential impacts to other special status fish species occurring in Upper and Lower Meadow Valley Wash (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace) would be considered low magnitude due to minimal tree harvesting in the drainage. If wood product harvests occurred in areas near springs or other perennial stream segments, other sensitive fish and invertebrates such as springsnails could be affected on a short-term basis.

Special Status Species on Non-BLM-administered Land. Habitat occupied by the three federally endangered fish species on BLM-administered land does not occur within areas representing potential wood harvest areas (i.e., evergreen forests). In addition, wood harvest areas are not located adjacent to habitat for the six federally listed fish on non-BLM-administered land. Therefore, the wood harvest program is not expected to affect sensitive aquatic species.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario (see Section 4.18, Geology and Mineral Extraction). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Big Spring Spinedace. Three historic mining claims (closed in 1986) exist in the immediate vicinity of Condor Canyon and overlap with Big Spring spinedace designated critical habitat (U.S. Fish and Wildlife Service 1993). Impacts from these activities included loss or alteration of habitat, sedimentation, and removal of riparian vegetation. One active mining claim exists in Section 23. If this claim is developed in the next 20 years, potential impacts could occur, as discussed for past mining activities. No active oil and gas leases overlap with occupied or designated critical habitat for Big Spring spinedace; therefore, oil and gas development would not affect this species.

Pahrump Poolfish and White River Springfish. No historic mining or oil and gas development overlap with the area surrounding Shoshone Ponds or Ash Springs. The areas surrounding habitat occupied by these species also are closed to leasable and mineral materials. Therefore, these activities are not expected to affect these species. Future fluid mineral development could occur and affect habitat for these species, since the land surrounding their habitat is not closed to fluid leasable mineral development.

Other Sensitive Species on BLM-administered Land. Other special status fish species in Upper and Lower Meadow Valley Wash (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace) could be affected by future mining, as discussed for Big Spring spinedace. Mining in the garnet rock quarry in the Hampton Creek drainage could affect habitat for Bonneville cutthroat trout. Oil and gas development in Newark Valley could impact Newark Valley tui chub.

Special Status Species on Non-BLM-administered Land. No historic or future mining is expected to occur in areas surrounding occupied and designated critical habitat for the other seven federally listed fish species that occur on non-BLM-administered land.

Effects of mineral development on special status wildlife species would be similar to those discussed for the Proposed RMP with various species covered by timing and use stipulations under the fluid minerals leasing program. In relation to other types of mineral development activities, special status wildlife species generally would be protected through project-specific mitigation measures developed as a result of additional NEPA analyses associated with the individual projects at the time they are proposed.

Minerals leasing would continue to be evaluated and mitigated, as needed, on a site-specific basis for the protection of special status plants.

Watershed Management.

Big Spring Spinedace. The watershed analysis for Panaca Valley, which contains designated critical habitat for Big Spring spinedace in Condor Canyon, is considered a high priority in the assessment schedule. The assessments would determine the physical and biological conditions of a watershed. During the implementation phase of the watershed analysis, recommendations would be made to restore habitat features that are impaired or not functioning satisfactorily. In the long-term, the watershed analysis would help to improve aquatic habitat. However, until the assessments are completed, current conditions in water resources would continue.

Pahrump Poolfish. The Shoshone Ponds area is included among the high priority watersheds Improvements in habitat conditions would occur, as discussed for the Big Spring spinedace.

White River Springfish. The Ash Springs area is included among the high priority watersheds. Improvements in habitat conditions would occur, as discussed for the Big Spring spinedace.

Other Sensitive Species on BLM-administered Land. Watershed analyses in Meadow Valley Wash, which are on the high priority list, also would be helpful in identifying habitat concerns for Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace. Other special status species that could benefit from watershed analyses include White River desert sucker and Preston White River Valley springfish (White River North is a high priority watershed), Moorman White River springfish (White River South is a high priority watershed), and Bonneville cutthroat trout (Deep Creek and Snake Valley North are low priority watersheds while Snake South is a high priority watershed). As stated above, current trends in water bodies would continue until habitat restoration is implemented. Habitat for springsnails would improve at scattered spring locations throughout the planning area, with the timing of improvements depending on the schedule of the various watershed assessments and subsequent treatments.

Special Status Species on Non-BLM-administered Land. Watershed analyses for the BLM-administered lands adjacent to the federally listed species that occur on state or private land include a combination of high and low priority watersheds.

Following vegetation treatments, the quantity and quality of forage (i.e., herbaceous vegetation) is expected to increase within treated areas and would provide improved habitat for special status species in the short term. In the Schell Resource area, the reservation of 30 percent of additional forage for wildlife would continue to provide an incremental increase in available forage for special status species. Additional forage within the Egan and Caliente Resource Areas in the planning area would continue to be allocated or reserved proportionately among all users, including wildlife, on a case-by-case basis. Although treated areas would provide additional herbaceous forage and increased habitat quality for wildlife in the short term, landscape level effects would continue to result from habitat degradation and fragmentation, reduction in ecological health, and reduction in vegetation resiliency in the long term.

A more detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis.

Fire Management.

All Species. If prescribed and wildland fire use are conducted in areas containing habitat for special status species, effects could be the short-term loss of understory and woody debris, which provides cover and shading for aquatic species. Within 10 years, vegetation would recover along the streams and provide cover attributes with a lower fire risk. Restoration of woody vegetation in riparian areas could take longer than 10 years. The potential for large uncontrolled wildland fires would exist throughout the next 20 years. Increased erosion and sediment input to streams likely would occur in these burned areas due to the loss of vegetation.

Big Spring Spinedace. Under this alternative, the restoration efforts would continue to focus on mitigation. Restoration and recovery efforts would focus on mitigating the direct and indirect effects of post-wildland fire on Condor Canyon and the associated aquatic habitats.

Other Sensitive Species on BLM-administered Land. Habitat restoration for Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace would focus on stabilization projects in areas burned by wildland fires in Upper and Lower Meadow Valley Wash.

Restoration activities resulting from wildland fire use and prescribed fire commonly would improve forage palatability for some special status wildlife species through the use of both native and nonnative plant species, increased availability of herbaceous forage plants, and increased amount of habitat edge in the short term. However, at the historic rate of restoration, it is anticipated that vegetation communities would continue to exhibit transitions in community structure and composition, increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs) in untreated areas. In the absence of large fires, these habitat changes would result in a reduction of herbaceous forage, structure, and overall suitability of habitats for special status species. Even with the expansion of fire use to the extent allowed under the current fire plan, it is expected that woody fuels would continue to accumulate in untreated areas, and the probability of major, uncontrollable stand-replacing fires would continue to escalate. Thus, over the long term, it is anticipated that increased large fire events would provide open niches for expansion of nonnative and functionally divergent weedy species including flammable annuals and non-palatable perennials. On a landscape scale, habitats would exhibit a reduction in overall habitat quality, ecological health, and vegetation resiliency in the long term.

Prescribed fire and wildland fire use would continue to be evaluated and mitigated, as needed, on a site-specific, case-by-case basis to minimize potential impacts to special status plants.

It is not likely that fire management activities would affect the Ute ladies'-tresses orchid since this species occurs within and near riparian and wetland areas which are not conducive to carrying wildland fires due to the higher moisture content of the soils and vegetation. Fire management activities would not likely affect the Sunnyside green gentian since this species occurs in the salt desert shrub community, which likely would not have sufficient natural fuels to support a major fire. Other special status plants that occur in the pinyon-juniper woodland and sagebrush communities may be affected by wildland fires since these communities include a sufficient amount of natural fuels that are conducive to carrying wildland fires.

Noxious and Invasive Weed Management.

Big Spring Spinedace. As part of existing conditions in Condor Canyon, most of the large native structural vegetation was destroyed by the 1999 fire events. As of early 2006, restoration efforts have not replaced native vegetation including a riparian cover component. Noxious and invasive weed management activities would result in varying effects on Big Spring spinedace habitat. The mechanical removal of weeds would result in soil disturbance, which could contribute increased sediment input into Meadow Valley Wash during runoff events. Increased sediment could alter fish habitat by covering bottom substrates or adversely affecting macroinvertebrate food sources for fish. The duration of sediment-related effects would be short-term in duration (i.e., several months to several years until new vegetation is established). The eradication of monotypic tamarisk stands along Upper Meadow Valley Wash would remove some overhanging cover that provides shade and streamside structure. Most mixed canopy tamarisk along Upper Meadow Valley Wash has already been removed. Removal of tamarisk also could result in localized sediment increases due to reduced bank stability. After new vegetation is established in several years, cover and bank stability would be replaced along the stream. The effect of tamarisk removal on fish habitat would be the potential increased water quantity in streams. Tamarisk consumes relatively high amounts of water compared to other vegetation.

Pahrump Poolfish and White River Springfish. Noxious and invasive weed management would not affect habitat for these species, since no treatment is planned for the area surrounding the Shoshone Ponds or Ash Springs at this time. If future weed treatments occurred near these water bodies, potential effects could involve sedimentation from surface disturbance as part of nonchemical treatment. By following standard operating procedures, chemical weed treatment would not be expected to affect water quality.

Other Sensitive Species on BLM-administered Land. Potential effects of weed treatment on other special status species (i.e., Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, White River desert sucker, relict dace, Bonneville cutthroat trout, and springsnails) would be the same as described for Big Spring spinedace. Habitat restoration for the Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace would focus on the control of tamarisk in Upper and Lower Meadow Valley Wash.

Special Status Species on Non-BLM-administered Land. Noxious weed management activities would not affect areas occupied by six federally listed and other special status species on non-BLM-administered land. When considering the drainage characteristics, no indirect effects involving sedimentation or other water quality changes are expected to affect habitat used by these species.

Noxious and invasive weed treatments would continue to be evaluated and mitigated on a site-specific basis for the protection of special status plant species. Weed infestations could be directly affecting special status plant populations within the planning area; however, this has not been documented.

Special Designations.

All Species. Under Alternative A, no new special designations would be implemented. In addition, the three existing ACECs (Beaver Dam, Kane Springs, and Mormon Mesa) do not overlap with habitat for sensitive aquatic species. Therefore, special designations would not affect sensitive fish and invertebrate species.

The three existing ACECs include known populations of four special status plant species. Although prescribed for the specific benefit of the desert tortoise, these ACECs also provide protection for special status plant species due to closures to livestock grazing and off-highway vehicle use. The White River Valley ACEC described under the Proposed RMP would not be designated and existing impacts to special status plant species in that area would continue.

Conclusion. Management for sensitive fish and invertebrate species would focus on the maintenance, mitigation, and restoration of habitat, as identified in the management and recovery plans for the species. Other programs would continue to result in sedimentation and habitat alteration due to surface disturbance. On a long-term basis, riparian vegetation would be degraded as a result of wild horses and livestock grazing, which would adversely affect aquatic habitat. Development of disposed lands could involve uses with water consumption requirements that could affect habitat through changes in flow or water level. In general, there would be less protection for spring habitat. Alternative A would meet the goal and objectives for federally listed fish species through management actions and compliance with Section 7 of the Endangered Species Act. However, the goal and objectives may not be met for "precluding the need to list additional species."

Management of special status species would continue to occur predominantly at the scale of individual allotments and occasionally at a planning area scale through management actions that address an immediate need or habitat niche for the maintenance, mitigation, and restoration of a single special status species on a case-by-case basis. Although restoration would promote more suitable habitat conditions for special status species on a localized basis, watershed level and landscape level effects would include continued habitat deterioration for many of the special status species.

A detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. As part of the best management practices, potential mitigation measures and monitoring would be applied on a site-specific basis. Therefore, implementation of Alternative A would result in minimal long-term impacts to special status plants and enable additional management emphasis for any populations identified during the watershed analysis. However, any ongoing impacts to unknown populations of special status plants would continue until such areas undergo watershed analysis. Overall, this alternative would have a greater risk than the Proposed RMP of failing to achieve the program goal for special status plant species.

Alternative B

Impacts from Special Status Species Management Actions.

Parameter – Special Status Species Habitat

Management for special status aquatic species under Alternative B would involve actions shown in Section 2.6.7.1). In addition, species would be managed through evaluations of their overall specific habitat conditions and factors affecting their populations at the large-scale (entire planning area) and proactively resolved through habitat restoration and multiple use restrictions at the mid-scale (i.e., watershed). Maintenance and mitigation measures would continue to be implemented where multiple-use impacts occur or where habitat or populations are at or near their maximum natural levels.

Effects to special status species habitat generally would be the same as described for the Proposed RMP. Implementation of this alternative would establish management criteria through desired future conditions of special status species in order to treat and restore imperiled vegetation communities within the planning area and ensure that special status species are factored into the decision-making process during restoration actions.

Effects to special status bat species under this alternative would be the same as described for the Proposed RMP.

A more detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis. Thus, impacts to special status plant species would be minimal and similar to the Proposed RMP.

Parameter – Great Basin Riparian Habitat

Habitat for the Pahrump poolfish would be improved under Alternative B by building a new fence around Shoshone Ponds to exclude both human and livestock access. The fenced area also would be expanded in size to exclude new surface disturbance and minimize sedimentation and runoff from upland areas. The fenced area would be reseeded to minimize sedimentation input to the ponds.

Impacts to Big Springs spinedace, White River spinedace, and Railroad Valley springfish would be the same as described for the Proposed RMP.

Program-specific management actions would include the initiation of a systematic survey of potential habitats for Ute ladies'-tresses orchid. In addition, recovery actions and a conservation strategy for any discovered occurrences of the species or areas with habitat potential for the species would be developed.

Corrective actions to maintain and conserve, and restore the species would be implemented after the species distribution and habitats were evaluated. Based on the implementation of these management actions, impacts to Ute ladies'-tresses orchid would be avoided.

Parameter – Mojave Desert and Great Basin Riparian Habitats

Effects to special status species within riparian habitats of the Mojave Desert and Great Basin ecological systems would be the same as the Proposed RMP. Removal of livestock grazing from riparian areas within the Meadow Valley Wash would enhance aquatic habitat for Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace as well as result in increased nesting and foraging habitat for riparian special status species (e.g., southwestern willow flycatcher, yellow-billed cuckoo, and Arizona southwestern toad).

Parameter – Mojave Desert Riparian Habitat

Effects to special status species within riparian habitats of the Mojave Desert Riparian Habitat ecological systems would be the same as the Proposed RMP for White River springfish, Hiko White River springfish, and Pahranagat roundtail chub.

Parameter – Mojave Desert Scrub Habitat

Implementation of this alternative would increase herbaceous forage, cover, and shrub structure for special status species (e.g., desert tortoise and banded gila monster) in the Mojave Desert ecological system due to the removal of livestock grazing from the remaining desert tortoise habitat (see **Map 2.6.16-1**). Additional restoration and management actions and mitigation measures to protect or enhance habitats would be evaluated during the watershed analysis and habitat analyses.

Parameter – Mojave and Great Basin Desert Scrub and Salt Desert Shrub Habitats

Effects to special status species (e.g., burrowing owls) desert scrub and salt desert shrub habitats would be the same as the Proposed RMP except that the White River Valley ACEC would not be designated for the protection of the Sunnyside green gentian and other rare plant species. Thus, existing impact to these species would continue.

Parameter – Great Basin Sagebrush Habitat

Effects to special status species (e.g., greater sage-grouse and pygmy rabbit) within sagebrush habitats of the Great Basin ecological system would be the same as the Proposed RMP.

Impacts from Other Programs. Impacts to sensitive aquatic species and their habitat associated with vegetation, lands and realty, recreation, watershed management, fire management, and special designations would be the same as described for the Proposed RMP. Impacts to sensitive aquatic species and their habitat associated with water resources, wild horse, renewable energy, travel management and off-highway vehicle use, forest/woodland and other plant products, and noxious and invasive weed management would be the same as described for Alternative A.

Effects to special status wildlife species associated with vegetation, wildlife and fisheries, wild horses, renewable energy, forest/woodland and other plant products, geology and mineral extraction, fire management, and noxious and invasive weed management would be the same as described for the Proposed RMP.

Impacts to special status plants associated with renewable energy, geology and mineral extraction, watershed management, and noxious and invasive weed management activities would be the same as described for Alternative A. Impacts related to vegetation, wild horse management, lands and realty, and fire management would be the same as or similar to the Proposed RMP.

The following interrelated programs would result in different impacts compared to the Proposed RMP and Alternative A.

Fish and Wildlife.

Big Spring Spinedace. Since occupied habitat for trout in Upper Meadow Valley Wash does not overlap with designated critical habitat for Big Spring spinedace, management actions for trout species would not affect this species in this stream. However, the Recovery Implementation Team is discussing the potential to establish a refugium in Clover Creek, which may overlap with that habitat. If this recovery area is used, coordinated management efforts between the U.S. Fish and Wildlife Service and Nevada Department of Wildlife would be required.

Pahrump Poolfish, and White River Springfish. Habitat management for game fish species would not affect these species, since trout populations do not occur in Meadow Valley Wash, Shoshone Ponds, or Ash Springs.

Other Sensitive Species on BLM-administered Land. Under this alternative, priority habitats for priority species would be actively managed to maintain or enhance existing habitat.

The elimination of domestic livestock grazing within Rocky Mountain bighorn sheep ranges and migration corridors would improve the condition of known and potential habitat for various special status plants in the long term.

Lands and Realty. Conflicts with lands and realty would be the same as described for the Proposed RMP, except that approximately 90,600 acres of land would be available for possible disposal and special status species habitat and potential land use authorizations within ACECs could result in increased habitat degradation and habitat fragmentation. Designated corridors would be increased to 1 mile in width, potentially resulting in greater fragmentation effects. Land use authorization facilities would likely result in increased degradation and fragmentation effects in the long term. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Travel Management and Off-highway Vehicle Use and Recreation. Conflicts with travel management and off-highway vehicle use would be the same as described for the Proposed RMP, except that nine special recreation management areas totaling approximately 2.7 million acres would be designated with three being managed primarily for motorized recreation. Thus, potential impacts to special status species by noise and human activity in these areas may be greater than under the Proposed RMP.

Potential impacts (e.g., trampling of vegetation, soil disturbances) to known and potential habitat for the Ute ladies'-tresses orchid or other special status plants may occur as a result of off-highway vehicle trespass use in areas adjacent to designated roads and trails. However, eliminating cross-country off-highway vehicle use, limiting off-highway vehicle use to designated roads and trails on 10.3 million acres of land, and closing off-highway vehicle use on an additional 81,000 acres of land (wilderness study areas) would help protect known and potential habitat for special status plants. Known and potential habitat areas for special status species would not be subjected to long-term surface disturbances related to off-highway vehicle use in these areas.

Livestock Grazing.

Big Spring Spinedace. The potential effects of grazing on designated critical habitat for this species in Upper Meadow Valley Wash could be reduced, since grazing may either be unavailable in relation to bighorn sheep habitat or restricted until the revegetation objectives are met based on the watershed management program.

Pahrump Poolfish. A new fence would be built to exclude livestock grazing near Shoshone Ponds. The fenced area also would be expanded to exclude a larger area from grazing.

White River Springfish. No additional changes in the Ash Springs area would be implemented as part of Alternative B.

Other Sensitive Species on BLM-administered Land. Livestock grazing would be excluded from the northern portion of the Lower Meadow Valley Wash ACEC and limited for the southern portion. Restrictions in livestock grazing for desert tortoise and bighorn sheep habitat may reduce impacts to portions of the habitat for other special status species such as the Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace in Upper and Lower Meadow Valley Wash, the White River desert sucker and relict dace in the White River, and springsnails at scattered locations throughout the planning area. Livestock grazing would be excluded from all areas of Lower Meadow Valley Wash to protect and initiate conservation and restoration of aquatic habitat for Meadow Valley speckled dace and Meadow Valley Wash desert sucker.

Special Status Species on Non-BLM-administered Land. Livestock grazing in the planning area would not affect areas occupied by seven federally listed and other special status species on non-BLM-administered land. When considering the drainage characteristics, no indirect effects involving sedimentation or other water quality changes are expected to affect habitat used by these species.

Effects to special status wildlife species from livestock grazing would be similar to those described for the Proposed RMP, except that there would be approximately 3.8 million acres throughout the planning area that would be unavailable for livestock grazing, resulting from closure of desert tortoise habitat, desert bighorn sheep habitat, and some additional ACECs.

Livestock grazing would continue to occur on approximately 7.7 million acres of rangeland within the planning area. Grazing practices, however, would be modified where necessary to protect known or newly identified populations of Ute ladies'-tresses orchid or other special status plants. The closure of 542,100 acres of rangeland in the Mojave Desert region, approximately 3.0 million acres of bighorn sheep ranges and migration routes, and approximately 14,900 acres of new ACECs would help protect potential habitat for special status plants that may occur within these areas.

Geology and Mineral Extraction.

Big Spring Spinedace. Approximately 3.5 miles out of 4.2 miles of habitat for Big Spring spinedace would be closed to fluid, leasable, and mineral material development under Alternative B. Mining could occur in approximately 0.7 mile of habitat for this species, which could result in impacts such as loss or alteration of habitat, sedimentation, and removal of riparian vegetation.

Pahrump Poolfish. Mineral extraction would not affect this species because the Shoshone Ponds area would be closed to all types of mineral development.

White River Spinedace, White River Springfish and Railroad Valley Springfish. Mineral extraction could affect habitat for this species, since the lands surrounding occupied habitat is open to all types of mineral development. The types of impacts would include loss or alteration of habitat, sedimentation, and removal of riparian vegetation.

Hiko White River Springfish. Mining impacts to the Hiko White River springfish would vary depending on the location. Mineral extraction would not affect habitat in Crystal Spring because adjacent land would be closed to all types of mineral development. Mineral extraction could affect habitat for this species in Hiko Spring, since the surrounding land is open to all types of mineral development. The types of impacts would include loss or alteration of habitat, sedimentation, and removal of riparian vegetation.

Pahranagat Roundtail Chub. Mineral development impacts on historic habitat in Hiko and Crystal springs would be the same as discussed for Hiko White River springfish. Potential impacts at occupied habitat in the Pahranagat River could include loss or alteration of habitat, sedimentation, and removal of riparian vegetation, since the surrounding lands are open to all types of mineral development.

Other Sensitive Species on BLM-administered Land. Mineral extraction in portions of upper and lower Meadow Valley and upper White River Valley would be allowed, which indicates potential impacts on

Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, White River desert sucker, White River speckled dace, relict dace, and springsnails.

Watershed Management. Effects to special status wildlife species from watershed management would be similar to those effects described for the Proposed RMP, except that implementation of Alternative B would provide increased available forage and water for special status species in the long term.

Special Designations. Fifteen new ACECs totaling 134,350 acres would be established for the protection of other resources. The establishment of these ACECs and the land use restrictions associated with these ACECs may have a positive effect on known and potential habitat for special status plants in these areas.

Conclusion. Sensitive fish and invertebrate species would be managed through evaluations of their overall habitat conditions. Numerous resource uses could affect sensitive aquatic habitat as a result of sedimentation, vegetation removal, or habitat alteration. However, grazing impacts would be eliminated on approximately 3.9 million acres including habitats for several aquatic special status species. Vegetation management could result in greater short-term impacts through erosion and sedimentation as a result of increased treatment areas. Management and restoration plans with two new ACECs would help restore habitat for fish species in Condor Canyon and Lower Meadow Valley Wash. On a long-term basis, the restoration of vegetation resilience in riparian areas and the surrounding uplands would improve habitat conditions for sensitive fish and invertebrate species. By implementing the various management actions associated with the special status species management direction and mitigation actions associated with other programs, the goals and objectives for special status aquatic species would be achieved.

Special status wildlife species would be specifically assessed, based on species-specific desired future conditions, and compared to overall habitat conditions and identification of causal factors for declines at the mid-scale. On a watershed level, restoration activities would result in higher quality forage, increased cover and vegetation structure, and increased security for special status species. On a landscape level, restoration activities to achieve desired range of conditions would improve special status species habitats by reducing habitat degradation and fragmentation, and promoting ecological health and resiliency. Alternative B would be expected to achieve the program goal.

The initiation of a systematic survey of potential habitats for the Ute ladies'-tresses orchid, development of recovery actions and a conservation strategy for potential habitat for, or possible new occurrences of, Ute ladies'-tresses orchid would provide additional protection and recovery prospects for these species. The establishment of 15 new ACECs for the protection of other resources and the land use restrictions associated with these ACECs may offer additional protection where and if special status plants occur in these areas. Therefore, implementation of Alternative B would result in additional protection for special status plants and would achieve the program goal relative to such species.

Alternative C

Impacts from Special Status Species Management Actions.

Parameter – Special Status Species Habitat

Program-specific impacts to special status aquatic species under this alternative would be similar to current management.

Under this alternative, management of special status wildlife species would be similar to Alternative A. Special status species management would continue to occur predominantly at a fine scale and occasionally at a large scale through management actions that address an immediate need or habitat niche for the maintenance, mitigation, and restoration of a single special status species on a case-by-case basis. While management actions would be taken as necessary to prevent the listing of additional species in accordance with BLM Management Policy 6840, the desired range of vegetation conditions used under this alternative would be less favorable for most special status species than those used in the Proposed RMP and Alternative B.

Under this alternative, management of bat roosting and foraging habitat would be the same as described for Alternative B, except the Ely Field Office Cave Management Plan and Nevada Bat Conservation Plan would be utilized for guidance on implementation of proactive bat management actions only in areas where there are no conflicts with commodity objectives. As a result, potential conflicts to foraging and roosting habitat outside of cave habitats would continue to result in landscape level effects from increased habitat degradation and habitat fragmentation.

Potential impacts to Ute ladies'-tresses orchid, Sunnyside green gentian, and other special status plants would be similar to those described for Alternative A. As stated for the program-specific impacts associated with Alternative A, a pre-construction review of potential impacts to special status plants would be conducted prior to development. A more detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. Best management practices, potential mitigation measures, and monitoring would be developed on a site-specific basis.

Parameter – Great Basin Riparian Habitat

Surface disturbance and sediment-related impacts to Pahrump poolfish would be reduced, since the fencing around the Shoshone Ponds would be repaired to its original size and specifications. Impacts to Big Spring spinedace, White River spinedace, and Railroad Valley springfish would be the same as discussed for Alternative A.

As with Alternative A, pre-construction review of proposed projects and disturbances requiring NEPA review would continue to be the primary means of avoiding potential impacts to known or potential habitat for the Ute ladies'-tresses orchid and other special status plant species. If unknown populations of Ute ladies'-tresses exist on public lands, the current management approach would not protect such populations from potential conflicts with resource uses not requiring NEPA review.

Parameter – Mojave Desert and Great Basin Riparian Habitats

Impacts to Meadow Valley speckled dace and Meadow Valley desert sucker would be the same as discussed for Alternative A.

Within riparian habitats of the Mojave Desert and Great Basin ecological systems, restoration activities within Meadow Valley Wash would be similar to Alternative A, except that management actions would promote increased forage production and developed and managed recreation in the Lower Meadow Valley Wash ACEC and livestock utilization and special use restrictions would be enacted as needed. As a result, grazing and recreation would continue to affect herbaceous and shrub cover and overall nesting and foraging structure for riparian habitat dependent special status species (e.g., southwestern willow flycatcher, yellow-billed cuckoo, and Arizona southwestern toad).

Parameter – Mojave Desert Riparian Habitat

Impacts to White River springfish, Hiko White River springfish, and Pahranagat roundtail chub would be the same as discussed for Alternative A.

Parameter – Mojave Desert Scrub Habitat

Management of special status species (e.g., desert tortoise and banded gila monster) within desert scrub habitats of the Mojave Desert ecological system would be the same as described for Alternative A and similar impacts would be expected.

Parameter – Mojave and Great Basin Desert Scrub and Salt Desert Shrub Habitats

Management of special status species (e.g., western burrowing owl) within desert scrub and salt desert shrub habitats of the Mojave Desert and Great Basin ecological systems would be the same as described for Alternative A and similar impacts would be expected.

Parameter – Great Basin Sagebrush Habitat

Management of greater sage-grouse habitat would be similar to Alternative A, except that sagebrush habitat restoration would be emphasized in areas that have the greatest potential to provide additional livestock forage and habitat management to stabilize greater sage-grouse populations and improve sagebrush habitats would primarily occur through the local greater sage-grouse planning teams or through actions identified during the watershed analysis process. As a result, sagebrush habitat would not be actively managed with emphasis on greater sage-grouse, and habitat degradation and fragmentation could continue.

Impacts from Other Programs. Impacts to sensitive aquatic species and their habitat associated with water resources, renewable energy, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, and noxious and invasive weed management would be similar to those described for Alternative A. Effects associated with vegetation, wild horses, watershed management, travel management and off-highway vehicle use, and oil and gas development management activities would be the same as described for the Proposed RMP.

Effects associated with wild horses, renewable energy, forest/woodland and other plant products, and noxious and invasive weed management would be similar to those described for the Proposed RMP. Effects to wildlife associated with geology and mineral extraction would be the same as or similar to those described for Alternative A.

Impacts to special status plants associated with renewable energy, geology and mineral extraction, watershed management, and noxious and invasive weeds management activities would be the same as described for Alternative A. Impacts to special status plant species associated with management of vegetation, fish and wildlife, and wild horses would be the same as or similar to the Proposed RMP.

The following interrelated program would result in different impacts compared to Alternative A and the Proposed RMP.

Vegetation. Vegetation treatments under Alternative C would focus on somewhat greater total acreage to be treated than the Proposed RMP, but the goals of treatment and management would focus treatments on the creation of vegetation communities that are more productive for commodity interests such as livestock and forest/woodland products. Under this alternative, restoration treatments would maximize herbaceous vegetation states and limit the amount of mature woodland and shrub states, as compared to other alternatives. Thus, achievement of successful restoration generally would benefit a somewhat different set of special status species under this alternative than under the Proposed RMP. Like the Proposed RMP, treatments would occur across all vegetation types, but the greatest area of treatments would occur in sagebrush and pinyon-juniper communities, with limited applications in other communities where current conditions are not within the desired ranges of vegetation conditions.

Impacts to special status wildlife species from the vegetation management under Alternative C would include the short-term reduction in forage and ground cover on each treatment area until the desirable perennial species recover or become established, and the long-term conversion from dense shrub and woodland communities to open, herbaceous-dominated communities on much of the area to be treated. While this conversion would favor some wildlife species by creating a greater amount of herbaceous forage, a reduction of more mature and dense shrub vegetation would result in the long-term reduction of breeding and seasonal habitats for shrubland-dependent special status species. On a landscape scale, habitats would exhibit a reduction in overall habitat quality for numerous wildlife species in the long term.

Fish and Wildlife. The effects on sensitive aquatic species associated with fish management activities would be the same as discussed for Alternative A except that the 2:1 acreage mitigation goal for disturbance of priority habitats would not apply, resulting in increased effects to priority habitats.

Lands and Realty. No habitat for special status fish species is located within possible land disposal areas for Alternative C, but some habitat occurs within 1,000 feet of identified potential disposal areas. More instances of such proximity occur in Alternative C than in Alternative B.

Conflicts to special status wildlife species from potential disposal of lands would be the same as described for the Proposed RMP except that up to approximately 295,200 acres would be available for possible disposal. Conflicts with utility right-of-way management would result in the same general effects as described under the Proposed RMP, except that existing designated corridors would be increased to 3 miles in width, resulting in greater fragmentation effects. In this alternative, the proposed utility corridor along the western margin of Spring Valley would potentially affect 36 greater sage-grouse leks (within 2 miles on either side of the 3-mile-wide corridor [see **Map 2.4.12-5**]). Potential conflicts with the development of communications sites would be the same as described for Alternative B.

Land use authorizations would likely result in increased habitat degradation and fragmentation on special status species in the long term. New land use authorizations would be evaluated for effects on special status species, in accordance with NEPA. Implementation of requirements that would reduce potential impacts to special status species are presented in Appendix N of the Draft Ely RMP/EIS (July 2005).

Lands and realty management programs would have similar potential impacts to known and potential habitat for the Ute ladies'-tresses orchid and other special status species as described for Alternative A. In addition, new designated corridors (3.0 miles wide) could be established. Pre-construction reviews and detailed analyses would be the same as those described for Alternative A.

Travel Management and Off-highway Vehicle Use and Recreation. Conflicts from travel management and off-highway vehicle use and recreation would be the same as described for Alternative A, except that cross-country off-highway vehicle use would be limited to approximately 32,000 acres on selected dry lake beds. Approximately 1.1 million acres would be closed to off-highway vehicle use and approximately 10.4 million acres would be restricted to existing roads and trails. In addition, 2.6 million acres would be managed as nine dispersed special recreation management areas in the planning area. Four new recreation permit areas totaling 1.3 million acres also would be established for motorcycle special recreation events. As a result, degradation of habitat and habitat fragmentation associated with these uses would occur on a larger area than under Alternative B but a more concentrated area than Alternative A.

Potential impacts (e.g., trampling of vegetation, soil disturbances) to known and potential habitat for the Ute ladies'-tresses orchid or other special status plants may occur as a result of off-highway vehicle trespass use in areas adjacent to designated roads or trails. However, limiting off-highway vehicle use to designated roads and trails on approximately 10.4 million acres of land would have a positive effect on known and potential habitat for special status plants. Known and potential habitat areas for special status species would not be subjected to long-term surface disturbances related to off-highway vehicle use in these areas.

Recreation. Recreation activities could increase under this alternative, which could result in surface disturbance near water bodies containing special status aquatic species. However, management would be done in a manner that would minimize effects to water bodies.

Livestock Grazing. Effects to special status species from livestock grazing would be similar to those described for Alternative A, except that grazing would not be available on approximately 6,400 acres of newly designated ACECs, which would benefit wildlife by providing additional forage and water for special status species.

Making approximately 6,400 acres within four newly designated ACECs unavailable to livestock grazing would help protect any potential habitats for special status plants that may exist in those areas in the long term.

Watershed Management. Effects to wildlife from watershed management would result in a reduction of available forage and water for special status species in the long term.

Fire Management. The effects of fire management under Alternative C would vary for treated and untreated areas. There would be a buildup of fuel materials in untreated areas, which could contribute to the probability of a major wildland fire event with subsequent erosion input to drainages. Treated areas would reduce material buildup, which would reduce erosion input to drainages on a long-term basis.

Under Alternative C, prescribed fire and wildland fire use would not be the preferred management tools, and wildland fires would be suppressed to the extent practical. Although areas treated may be greater than described for Alternative A, it is anticipated that increased fuel loading from full fire suppression on the planning area would eventually lead to large fire events in untreated areas, which would lead to greater long-term habitat effects to special status species than discussed for the Proposed RMP, Alternative A, or Alternative B.

The suppression of all wildland fires would likely have some effect on known and potential habitat for special status plants in the short term. However, the increase in fuel loads over time would increase the likelihood of widespread catastrophic fires in the long term. Populations of special status plants subjected to these catastrophic fires could be eliminated.

Special Designations.

Big Spring Spinedace. The Condor Canyon ACEC would be managed as a multiple use area with managed recreational development. Recreational use in Condor Canyon could result in increased surface disturbance and sediment input to Meadow Valley Wash, which could affect habitat for Big Spring spinedace.

Meadow Valley Wash Desert Sucker and Meadow Valley Wash Speckled Dace. Potential sediment-related impacts in the Condor Canyon ACEC also could affect these species. The Lower Meadow Valley Wash ACEC would be managed as a multiple use area with managed recreational development.

Recreational use in Lower Meadow Valley Wash could result in increased surface disturbance and sediment input to the drainage, which could affect habitat for Meadow Valley Wash desert sucker and Meadow Valley speckled dace. The same mitigation discussed for Big Spring spinedace also would apply to these species.

Seventeen new ACECs totaling approximately 129,700 acres would be established for the protection of other resources. The establishment of these ACECs and the land use restrictions associated with these ACECs would offer protection where and if potential habitat for special status plants exists in these areas.

Conclusion. Program-specific impacts special status aquatic species would be similar to Alternative A. In general, management actions would allow a greater intensity of development, which would result in a higher potential for sedimentation impacts on aquatic habitat. Increased recreation activities could result in additional surface disturbance and sediment impact on habitat for sensitive aquatic species. Alternative C would meet the goal and objectives for federally listed fish species through management actions and compliance with Section 7 of the Endangered Species Act. However, the goal and objectives may not be met for "precluding the need to list additional species".

Management of special status wildlife species would continue to address an immediate need or habitat niche for the maintenance, mitigation, and restoration of a single special status species on a case-by-case basis. On a watershed level, special status species conflicts would include decreased shrub cover, a reduction in vegetation community structure, and increased competition for habitat by sagebrush dependent species. On a long-term basis, Alternative C would not likely achieve the program goal.

A detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis. In addition, the establishment of 17 new ACECs for the protection of other resources and the land use restrictions associated with these ACECs may offer additional protection where and if habitat for special status plants occur in these areas. However, any ongoing impacts to unknown populations of special status plants would continue until such areas undergo watershed analysis. Overall, this alternative would have a greater risk than the Proposed RMP of failing to achieve the program goal for special status plant species.

Alternative D

Impacts from Special Status Species Management Actions.

Parameter – Special Status Species Habitat

Management of special status fish species under Alternative D would involve a passive and indirect approach to restore habitat throughout the planning area through the exclusion of discretionary commodity uses of public lands. Natural processes would be allowed to restore degraded habitats and determine future habitat conditions. Any active habitat management would emphasize restoration of human-induced changes to the natural environment and the protection of large-core areas of existing intact habitats. The effects of this management approach would be improvement in habitat conditions as a result of decreased surface disturbance and surface runoff into watersheds. An exception would be when and where this approach leads to crossing thresholds that cause future vegetation states to inadequately protect watersheds. Some of those areas then would be subject to accelerated erosion due to inadequate vegetation cover, especially where and when the future state burns frequently. Passive management could require a relatively long timeframe (10 to 20 years or longer) before aquatic habitat conditions improve. Direct management involving restoration of human-induced effects on watersheds could be implemented in a shorter timeframe. Restoration efforts would focus on excluding use in riparian areas. As a result, stream banks could become more stabilized and overhanging vegetation along water bodies could be more developed.

Under this alternative, management of special status species would emphasize a passive management approach to restoration through the exclusion of discretionary uses of public lands to achieve the desired range of conditions. Implementation of Alternative D would result in the continuation of habitat transitions (e.g., conifer invasion of aspen stands and establishment of pinyon and juniper trees in sagebrush shrubland), increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs). The increased woody fuel and woody competition with herbaceous vegetation would cause some untreated plant communities to cross ecological thresholds. Eventually, these untreated communities would burn, resulting in hotter fires that would cause soil to be more susceptible to accelerated erosion and expansion of weeds. These habitat changes would result in a reduction of herbaceous forage, community structure, and overall suitability of habitats for special status species. Localized restoration activities following fires would improve habitat conditions for special status species, but on a landscape level, changes would continue to result in habitat degradation, reduction in ecological health and resiliency, and reduction in overall biological diversity, largely as a result of increasing numbers of large-scale fires and spread of invasive species. With the resultant loss of habitat for several special status species, particularly those that inhabit sagebrush and salt desert shrub communities, the probability continues to increase for additional listing of such species under the Endangered Species Act. Listing of one or more species within this complex of sensitive species easily could impose major constraints on other multiple uses within the planning area.

Effects to special status bat species under this alternative would be the same as described for Alternative A and similar impact would be expected.

Direct impacts of special status species management direction to potential and known habitat for most special status plant species would be minimal since the special status species management of this alternative would emphasize a passive and indirect management approach. Most of the potential impacts would occur as indirect impacts from other management programs.

Parameter – Great Basin Riparian Habitat

Management for special status aquatic species would be the same as Alternative A, and impacts from special status species management activities would be similar.

Impacts to potential habitat for the Ute ladies'-tresses orchid would be the same as described for Alternative B since a specific survey and recovery program would be initiated relative to this particular species. Such efforts would improve the knowledge base and protection measures related to the species.

Parameter – Mojave Desert and Great Basin Riparian Habitats

Management for special status aquatic species would be the same as Alternative A, and impacts from special status species management activities would be similar.

Within riparian habitats, implementation of this alternative would result in the incremental increase in nesting and foraging habitat for riparian special status species (e.g., southwestern willow flycatcher, yellow-billed cuckoo, and Arizona southwestern toad).

Parameter – Mojave Desert Riparian Habitat

Management for special status aquatic species would be the same as Alternative A, and impacts from special status species management activities would be similar.

Parameter – Mojave Desert Scrub Habitat

Within desert scrub habitats of the Mojave Desert ecological system, this alternative would benefit Mojave Desert special status species (e.g., desert tortoise and banded gila monster) by improving herbaceous understory and cover in the long term.

Parameter – Mojave and Great Basin Desert Scrub and Salt Desert Shrub Habitats

Within Mojave Desert mountain and desert scrub habitats, desert scrub and salt desert shrub habitats of the Mojave Desert and Great Basin ecological systems, landscape level changes would continue to result in habitat degradation, reduction in ecological health and resiliency, and reduction in overall biological diversity largely as a result of the potential major fires and spread of invasive species.

Parameter – Great Basin Sagebrush Habitat

Within sagebrush habitats of the Great Basin ecological system, landscape level changes would continue to result in habitat degradation, reduction in ecological health and resiliency, and reduction in overall biological diversity largely as a result of the potential major fires and spread of invasive species.

Impacts from Other Programs. Impacts to sensitive aquatic species and their habitat associated with water resources, noxious and invasive weed management, and special designations management activities would be the same as described for current management.

The following interrelated programs would result in different effects to special status wildlife species as compared to the previous alternatives.

Impacts to special status plants associated with fish and wildlife, watershed management, and noxious and invasive weeds activities would be the same as described for Alternative A. The following interrelated program would result in different impacts compared to Alternative A. Minimal impacts would be associated with management of lands and realty, renewable energy, and geology and mineral extraction since such programs would be reduced or eliminated under this alternative.

Vegetation. Management of riparian areas would involve prohibiting land-disturbing activities. Natural processes would be allowed to occur in riparian areas, which would help stabilize stream banks and provide overhanging cover for aquatic species. No herbicides would be used under this alternative, which would eliminate possible toxicity concerns for special status species.

Management of vegetation would emphasize a passive management approach to restoration with minimal influence from management and resource uses. As a result, degraded and fragmented habitats would be left to recover through natural processes. As discussed in Section 4.5, if such recovery occurs at all, it is expected to be very slow in this environment. Active habitat management would emphasize habitat treatments of invasive vegetation species. Implementation of this alternative would result in the continuation of ongoing habitat transitions (e.g., conifer invasion of aspen stands and establishment of pinyon and juniper trees in sagebrush shrubland), increased tree density and canopy cover, and a reduction of native herbaceous understory (e.g., grasses and forbs) in the long term. In the absence of large fires, these habitat changes would result in a reduction of herbaceous forage, community structure, and overall suitability of habitats for wildlife in the long term. However, with the accumulation of fine fuels in sagebrush (due to reduced livestock grazing) and heavy fuels in dense shrub and tree communities, increased large fire events would remove large areas of woodland and shrubland. Within the dense, overmature stands of sagebrush or pinyon-juniper woodlands, perennial understory species of grasses and forbs are commonly absent. Thus, without costly rehabilitation measures, most of these burned areas would not recover with native perennial herbaceous vegetation. Rather, the freshly burned areas would provide open niches for expansion of nonnative and weedy species including flammable annuals and non-palatable perennials. On a landscape scale, habitats would exhibit a reduction in overall habitat quality, ecological health, and vegetation resiliency in the long term.

Vegetation management programs would include the management of riparian areas and would allow these areas to undergo natural processes as nearly as possible. Riparian areas that have invasive or exotic species would be high priority treatment areas. The implementation of these vegetation management programs in riparian areas would improve the quality of potential habitat for Ute ladies'-tresses orchid in the planning area over the long term. The protection of native vegetation communities and prevention of expansion of annual exotic species would help maintain and improve the quality of known and potential habitat for special status species by reducing the spread and establishment of invasive species. However, the relative scarcity of vegetation treatments would allow fuels to continue to accumulate. Additional areas would cross one or more ecological thresholds. Crossing the threshold to the tree state could decrease water availability for riparian habitats. Crossing thresholds to high fuels states or states with minimal herbaceous understory could lead to major fires and accelerated soil erosion, thus damaging riparian habitats as well as the watersheds that supply them with water.

Wild Horses. Habitat for fish and invertebrate species could be affected by wild horse grazing and physical disturbance in the 24 herd management areas where herd growth would be uncontrolled. Streams could include Upper Meadow Wash (Big Spring Spinedace, Meadow Valley Wash Speckled dace, and Meadow Valley Wash desert sucker) and Goshute Creek (Bonneville cutthroat trout). Impacts to unfenced springs could affect habitat for springsnails.

Under this alternative, conflicts with wildlife would be similar to those described for Alternative A except that wild horse populations within these areas would be uncontrolled, substantially increasing the impacts to wildlife. It is expected that these uncontrolled populations would destroy the herbaceous forage and ground cover, reduce habitat structure, and diminish overall habitat quality in the long term.

Wild horse populations would be allowed to increase without limits on the existing 24 herd management areas. This uncontrolled herd growth would soon eliminate almost all forage, including any special status species plants, within these areas.

Lands and Realty. Impacts associated with lands and realty would be similar to Alternative A and would not be expected to affect habitat for special status fish species.

Effects to special status wildlife species and habitats resulting from lands and realty actions would be minimal since no net loss of public lands would occur under this alternative, nor would there be any new land use authorizations such as new rights-of-way.

Renewable Energy. Habitat for sensitive aquatic and terrestrial species would not be affected by this program, since there would be no issuance of rights-of-way for renewable energy development.

Travel Management and Off-highway Vehicle Use. Based on a reduction of off-highway vehicle, surface disturbance in watersheds would be reduced under Alternative D. As a result, sediment input to streams from off-highway use would be reduced, which would improve habitat for special status aquatic species.

Under this alternative, off-highway vehicle use would be restricted to approximately 400,000 acres of designated roads and trails. This closure of approximately 11 million acres to off-highway vehicle use would greatly reduce the effect to special status species by reducing overall habitat degradation and fragmentation.

Potential impacts (e.g., trampling of vegetation, soil disturbances) to known and potential habitat for the Ute ladies'-tresses orchid or other special status plants may occur as a result of off-highway vehicle trespass use adjacent to designated roads and trails. However, limiting off-highway vehicle use and closing most of the planning area to off-highway vehicle use would have a positive effect on known and potential habitat for special status plants. Known and potential habitat areas for special status plants would not be subjected to long-term surface disturbances related to off-highway vehicle use in these areas.

Recreation. Impacts to aquatic habitat could occur under this alternative, as a result of an increase in dispersed recreation. The types of impacts could include erosion or water quality changes, if activities occurred in stream or springs inhabited by sensitive fish or invertebrate species.

Livestock Grazing. Livestock grazing would be eliminated throughout the planning area, which would eliminate future impacts to special status species habitat such as surface disturbance/sedimentation, loss of riparian vegetation, and direct alteration of stream channel habitat.

No conflicts to special status wildlife species from livestock management would occur under this alternative, since livestock use would not be permitted on the planning area. This aspect of Alternative D would result in higher habitat quality for special status species, at least in the short term.

The elimination of livestock grazing throughout the planning area could allow special status plant habitats that have been heavily grazed to recover in the long term, contingent upon the absence of other major disturbances such as fire. Some vegetation communities containing habitat for special status plant species may not fully recover through removal of grazing alone.

Forest/Woodland and Other Plant Products. Habitat for sensitive aquatic species would not be affected by this program, since there would be no fuelwood collection or other wood products harvests except for personal pinyon pine nut collection and limited seed collection.

Conflicts to special status wildlife species from forest/woodland and other plant products would be minimal since only limited pinyon pine nut harvesting would be permitted.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario (see Section 4.18, Geology and Mineral Extraction). Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Watershed Management. In the short term, Alternative D would have minimal impacts to special status aquatic species, as watershed restoration would be primarily passive. The elimination of grazing and limited vegetation treatment in riparian areas would reduce and minimize stream sedimentation. However in the long term, the loss of resiliency in many of the vegetation communities surrounding aquatic habitat would place these habitats in greater jeopardy from catastrophic wildland fires and increased erosion and sedimentation.

Additional available forage would be allocated for watershed maintenance, wildlife, and wild horses after Standards for Rangeland Health have been met at the watershed level. However, because active management would not be a priority under this alternative, watershed level impacts would continue to result in habitat transitions and increased canopy cover. Landscape level impacts would continue to result in a reduction in overall habitat quality, ecological system health, and ecological resiliency in the long term, largely as the result of increased probability for large fires followed by reduced success probabilities for rehabilitation.

Fire Management. The effects of fire management on aquatic habitat would be similar to Alternative C except that in the absence of grazing and fire suppression, there would be a short-term buildup of fire fuels followed by a higher probability of widespread wildland fires. In terms of effects on aquatic habitat, there would be greater risk of fires burning in drainages, which would result in higher erosion impacts on both a short- and long-term basis.

Implementation of this alternative with minimal fire suppression, limited vegetation treatments, and absence of livestock grazing would result in accumulation of fire fuels in sagebrush and heavy fuels in shrublands and woodlands. This would ultimately lead to fire events that would have a high likelihood of eliminating shrub cover and woodland habitats for special status species in the long term. These impacts would be expected to occur at a large geographic scale with substantial cover losses, especially at lower elevations. Depending on shrub and woodland overstory, recovery rates, fire frequency, and reclamation success, these events could result in short- and long-term impacts. Effects would include long-term diminished habitat productivity and diversity for entire communities of shrubland and woodland wildlife. In the event of unsuccessful fire rehabilitation, these areas could devolve into vast monocultures of herbaceous grasslands dominated by cheatgrass and other invasive species that are of little or no value to special status species.

The minimal suppression of wildland fires under this alternative would lead to widespread major fire events that could jeopardize populations of any special status plant species in the affected areas.

Conclusion. Emphasis on passive management of sensitive aquatic species through exclusion of commodity uses on public lands could result in improved habitat conditions. Less erosion would occur from vegetation treatment, but far more would occur from widespread wildland fires. By implementing the various management actions associated with the special status species management direction and mitigation actions associated with other programs, the goals and objectives for special status aquatic species would be achieved.

Management of habitat for special status species would emphasize a passive management approach through the exclusion of discretionary commodity uses of public lands. On a watershed level, natural habitat transitions would continue with increased canopy cover and possible increased regeneration of palatable species. On a landscape level, habitats would exhibit a reduction in overall habitat quality, ecological health, and resiliency as the result of major, widespread wildland fires resulting in conversion to herbaceous communities. These habitat changes would result in a reduction of vegetation community structure and overall suitability of habitats for special status species. This alternative would likely achieve the program goal in the short term, but fail to sustain this habitat quality and achieve the goal over the long term.

Potential habitat for Ute ladies'-tresses orchid could improve in the planning area with the elimination of grazing and most other physical disturbances. A detailed analysis of potential impacts to special status plants would be completed during watershed and habitat analyses. The additional protection resulting from these measures, however, would be offset by the potential damage to special status plant populations resulting from increased wildland fires and uncontrolled wild horse populations under this alternative. Overall, this alternative would have a greater risk than the Proposed RMP of failing to achieve the program goal for special status plant species.

4.8 Wild Horses

Impact Issues

The primary impact issues associated with wild horse management relate to resource conflicts with other resources and uses such as vegetation, watersheds, wildlife habitat, livestock grazing, and erosion prevention/soil stabilization when appropriate management levels are not achieved. In the absence of population controls, most horse herds have the capacity to grow beyond the ability of the habitat to provide forage, water, space, and cover. In several existing herd management areas, the available habitat resources are marginal or inadequate to support healthy herds of wild horses. As herds grow beyond the appropriate management level for a given herd management area, wild horses increasingly compete with both wildlife and livestock for those local resources. Thus, population controls such as periodic gathers or fertility vaccinations are typically necessary to stabilize populations at levels supported by the available resources and compatible with other ongoing land uses.

Assumptions for Analysis

- Appropriate management level would be achieved and maintained in all alternatives except Alternative D.
- Public attitudes toward wild horse protection and adoption would remain similar to those displayed over the past 10 to 20 years.
- Natural reproduction and recruitment rates would continue to exceed natural mortality from predation, disease, and other factors.

Interactions with Other Programs

The wild horse management program within the planning area potentially would be affected by actions within the resource management programs for water resources, vegetation, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, geology and mineral extraction, watershed management, fire management, and noxious and invasive weed management.

Goal

Maintain and manage healthy, self-sustaining wild horse herds inside herd management areas within appropriate management levels to ensure a thriving natural ecological balance while preserving a multiple-use relationship with other uses and resources.

Northeastern Great Basin Resource Advisory Council Standard. Healthy wild horse and burro populations exhibit characteristics of healthy, productive, and diverse population. Age structure and sex ratios are appropriate to maintain the long-term viability of the population as a distinct group. Herd management areas are able to provide suitable feed, water, cover and living space for wild horses and burros and maintain historic patterns of habitat use.

Mojave-Southern Great Basin Resource Advisory Council Standard. Wild horses and burros within herd management areas should be managed for herd viability and sustainability. Herd management areas should be managed to maintain a healthy ecological balance among wild horse and/or burro populations, wildlife, livestock, and vegetation.

Objective

To maintain wild horse herds at appropriate management levels within herd management areas where sufficient habitat resources exist to sustain healthy populations at those levels. Herds would consist of healthy animals that exhibit diverse age structure, good conformation, and any characteristics unique to the specific herd.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to wild horses also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Wild Horses Management Actions.

Parameter – General Wild Horse Management

In the Proposed RMP, proposed appropriate management levels reflect the recent evaluation using multi-tiered analysis. The first tier consisted of evaluating each herd management area for five essential habitat components and herd characteristics: forage, water, cover, space, and reproductive viability. Additionally, interrelationships between wild horse populations from different herd management areas were analyzed (see **Table 3.8-2**). If one or more of these components were missing, or there was no potential for a stable shared genetic pool, the herd management area was considered unsuitable. If all components were present, the analysis proceeded to the second tier. In the second tier, monitoring data were used to establish the appropriate management level. Key forage utilization, use pattern mapping, and frequency were considered and if allotment objectives were being met, the highest value of historical ranges was used to set the appropriate management level. Where allotment objectives were not being achieved, appropriate management level was set based on census data relative to range utilization or the past need for emergency wild horse gathers, which suggested overpopulation of the herd management area.

Parameter – Herd Management Area Establishment

If monitoring and analysis showed all the essential habitat components were present to maintain healthy, self-sustaining wild horse populations on either individual herd management areas or two or more adjacent herd management areas and the established appropriate management levels provide for a reproductively viable population (125 individuals with 50 breeding adults), the herd management areas were determined to be viable for long term wild horse management. The evaluation determined that twelve of the current herd management areas (approximately 3.7 million acres) meet the criteria for retention. The twelve that met the criteria are primarily the largest herd management areas or portions of adjacent smaller herd management areas. The majority of acreage (approximately 71 percent) in herd management area status meets the criteria for retention. An additional sixteen herd management areas or portions of herd management areas (1.6 million acres) do not meet the criteria for retention as herd management areas.

Under the Proposed RMP, wild horses would be managed within six consolidated herd management areas that would be created from twelve current herd management areas covering approximately 3.7 million acres as shown in **Table 2.4-11** and illustrated on **Map 2.4.8-1**. The six new herd management areas would be:

- Pancake – made up of Monte Cristo and Sand Springs East herd management areas;
- Triple B – made up of Buck and Bald, Butte, and a portion of Cherry Creek herd management areas;
- Antelope – boundary adjusted due to highway fence;
- Silver King – made up of Dry Lake and portions of Rattlesnake and Highland Peak herd management areas;
- Eagle – made of Wilson Creek and Deer Lodge Canyon herd management areas; and
- Diamond Hills South – no change to herd management area.

The Proposed RMP would retain most large herd management areas and small units adjacent to them. Boundaries would be consistent with neighboring planning areas and agencies as to wild horse management. This would increase operational efficiency, resulting in more on-the-ground management of the six herd management areas, increased effectiveness of maintenance gathers resulting in decreased resource conflict. Further, it allows for the concentration of resources, funding, and management on the six herd management areas, resulting in more effective management of the wild horses and their environment.

Wild horses would no longer be managed in a number of herd management areas considered unsuitable for year-long occupation by horse herds. These areas total approximately 1.6 million acres, including the units shown in **Table 4.8-1**.

The Proposed RMP would result in the removal from management of approximately 1.6 million acres of current herd management areas (as shown in **Table 4.8-1**) that provide very limited habitat for wild horses or do not provide essential habitat components to sustain healthy, thriving herds in these areas. The total reduction in appropriate management level within the planning area associated with this alternative would

Table 4.8-1
Herd Management Areas Eliminated in the Proposed RMP

Herd Management Area	Public Land Area (acres)[1]	Approximate Number of Animals Removed
Antelope (west of Highway 93)	62,900	0
Applewhite	30,300	0
Blue Nose Peak	84,600	5
Cherry Creek (eastern portion)	3,200	0
Clover Creek	33,100	10
Clover Mountains	168,000	20
Delamar Mountains	183,600	40
Highland Peak (southern 2/3)	65,500	0
Jakes Wash	153,700	50
Little Mountain	53,000	30
Meadow Valley Mountains	94,500	5
Miller Flat	89,400	30
Moriah	53,300	30
Rattlesnake (southern 1/2)	37,400	0
Seaman	358,800	100
White River	116,300	80
Totals	**1,587,600**	**400**

[1] Rounded to hundreds.

be approximately 446 animals or about 21 percent of current appropriate management level for the whole planning area. The described actions would result in a less crowded environment, with less competition for desert tortoise habitat and other limited resources.

Boundary fences would be constructed along the perimeter of herd management areas where necessary to achieve management objectives, including reduction of conflicts with domestic livestock.

This approach would achieve a balance between horse populations on the six herd management areas and the habitat needed to support them on a sustained basis. The resultant herds are expected to be healthier and less susceptible to starvation, disease, and predation.

Parameter – Population Management

Under the Proposed RMP, all appropriate management levels would be expressed as a range with the upper level of the range based on available habitat and the lower level based on the projected recruitment rate between gather cycles as developed from herd monitoring data. The upper limit of the range would be the level at which the maximum number of wild horses could exist without causing resource damage. This population range would ensure that a thriving natural ecological balance is obtained since each herd would be managed in a manner designed to not exceed habitat limitations.

The Proposed RMP would focus wild horse management on population management based on those areas that possess the essential habitat components as described above, and that have the potential for self-sustaining, healthy wild horse populations within each herd management area.

Impacts from Other Programs.

Water Resources. Water is a limiting factor for horse herds on several herd management areas within the planning area, affecting not only the basic survival of horses within these areas, but also the distribution of their use and degree of conflict with other animals, including livestock and wildlife. It is unlikely that the number and locations of water sources within the retained herd management areas would be substantially altered under the Proposed RMP. However, with aggressive watershed restoration, water amounts at these sources should increase as watershed health increases, resulting in higher, and more reliable flows from these sources. Additional water developments for livestock or wildlife also would benefit wild horses.

Vegetation. Restoration treatments would affect wild horse populations where they occur within portions of herd management areas that are the primary use areas to the extent that the population may have to be reduced for a few years while the desired vegetation becomes established. Assuming that treatment activities affect herd management areas proportionately to their distribution within the planning area and assuming that 2 years of establishment without grazing are desirable for seedling establishment following seeding, the maximum total area affected at any one time could be in excess of 100,000 acres.

Total exclusion of wild horses from freshly seeded areas probably would not be practical, but in some herd management areas it may be necessary to fence selected areas or modify water sources to attract animals away from such areas or time treatments to gathers so that numbers are a low range of the appropriate management level. Impacts to wild horses from vegetation treatment activities would be similar in nature to current management, but would be spread over greater area. Long-term effects of the Proposed RMP would include healthier vegetation communities that provide more abundant and diverse forage species. This would result in enhanced nutrition and less stress on wild horses as they live on the range.

With watershed treatment and the removal of pinyon and juniper where they have expanded into sagebrush communities and treatment of pinyon-juniper woodland, cover would be reduced. The reduction in cover would result in easier capture during gather operations resulting in less stress while being gathered. Because tree cover is very important to wild horses in the summer for shade and the winter for thermal protection, watershed treatment also could result in a concentration of wild horses in the hottest and coldest times of year. The watershed treatments also would result in an increase of available forage and healthier vegetation communities.

Lands and Realty. Under the Proposed RMP, the lands identified for possible disposal would be approximately 75,600 acres. Potential disposal of lands in these areas would affect approximately 9,300 acres on the herd management areas identified under this alternative and could necessitate a reduction in the appropriate management level. Because disposals within herd management areas would be limited to prevent a reduction of appropriate management level below a reproductively viable population (125 animals with 50 breeding individuals), and ensure that wild horses can exercise in their free-roaming behavior, impacts to wild horses from land disposals would be limited. Among the lands identified for disposal, small areas of overlap with herd management areas occur northeast of Cherry Creek at the edge of the Antelope herd management area and northeast of Pioche at the juncture of the Silver King and Eagle herd management areas. These potential disposals are not expected to noticeably affect wild horse herd on these areas.

Renewable Energy. Under the Proposed RMP, renewable energy development in herd management areas could impact wild horse by preventing wild horses from using portions of the herd management areas due to development. Further, if development occurs in primary use areas within herd management areas for wild horses, the loss of certain summer or winter habitats could impact the long-term management of wild horses. Since the locations of the 40,000 acres of wind energy rights-of-way have not been determined, specific effects on herd management areas cannot be determined. Such effects would be analyzed in project-specific NEPA reviews. Newly-developed wind energy sites along ridge tops in herd management areas could impact wild horse gather operations that use helicopters. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS.

Travel Management and Off-highway Vehicle Use. Establishment of six herd management areas and the substantial reduction in amount of area open to off-highway vehicle use in this alternative would effectively reduce encounters and conflicts between off-road vehicle traffic and wild horse herds. Overall impacts of the increasing recreational demand on the planning area on wild horse management probably would be reduced in this alternative compared to current management.

Recreation. The primary interactions between wild horses and recreation are those associated with off-highway vehicle use (see paragraph above) and other dispersed recreation activities such as hunting and hiking. Five special recreation management areas totaling approximately 1.2 million acres would be established under the Proposed RMP. Portions of these would overlap with the Eagle, Silver King, Pancake, and Triple B Herd Management Areas. Some recreational users would seek out opportunities to view wild horses and may affect herd behavior and movement by their presence.

Livestock Grazing. Management of grazing allotments under the Proposed RMP would not involve changes likely to affect wild horse management. Livestock grazing will continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing will be maintained for 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use will be made as needed to meet or progress toward achievement of the standards. These actions would lessen the impacts to the resource.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario would be disturbed throughout the 11.5 million acres of the planning area. Potential short-term impacts include vegetation loss, habitat fragmentation, herd displacement, and increased noise and human presence. Long term impacts could include irretrievable loss of habitat, change in vegetation composition, and continuing habitat fragmentation. All proposed mineral actions would be evaluated on a case-by-case basis with specific recommended mitigations and best management practices. Closed areas and oil-and-gas stipulations will provide further protection and mitigation of potential disturbances to wild horses and their habitat.

Watershed Management. In the short term, the watershed analysis would help to improve wild horse habitat in various herd management areas where they overlap with the 41 high priority watersheds (approximately 2.6 million acres). The rate of completion of watershed analysis, evaluations, and implementation of watershed restoration strategies would be substantially increased compared to current management. Wild horses also would benefit in the allocation of the additional forage produced on watersheds within the herd management areas following vegetation treatments.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available), and other tools would be used to the greatest extent practical under the Proposed RMP. During the short-term, there would be a temporary reduction in forage availability and wild horses would be temporarily displaced from the area. Long-term habitat improvements would provide better forage for the maintenance of wild horses. Restoration of vegetation resilience and return to historical fire regimes would reduce impacts to wild horses when wildland fires occur. Fire suppression activities also may impact wild horses in terms of water withdrawal from local streams and waterbodies, increased human activity and traffic on access routes, and potential spills of fuel and chemicals. These effects generally would be localized and of short duration in comparison to the long-lasting effects of habitat alteration on the burned areas.

Noxious and Invasive Weed Management. Noxious weed management could affect wild horse herds if noxious and invasive weeds occur within the herd management areas to the extent that they replace desirable forage species, thereby reducing availability of quality forage. Some weeds are more toxic to horses than to other types of grazers. Under the Proposed RMP, the vegetation treatment and restoration efforts would help slow the spread of invasive species from those areas being treated and improve habitat for wild horses.

Conclusion. Wild horses would be managed where healthy, self-sustaining populations can be maintained over the long-term. Wild horse populations would be brought into balance with the available habitat resources needed to sustain healthy populations and prevent damage to the environment and surrounding resources. The Proposed RMP would achieve the goal for the wild horse management program.

Alternative A

Impacts from Wild Horses Management Actions.

Parameter – General Wild Horse Management

Wild horses would be managed where herd management areas currently exist regardless of whether habitat conditions can support a long-term reproductively viable population or not. The maintenance of small herds tends to reduce genetic diversity within these populations over several generations and render them more susceptible to various diseases and other maladies. Small herds would continue to be vulnerable to starvation and dehydration during drought years in those herd management areas where population numbers substantially exceed the appropriate management level.

Boundary fences along the perimeter of herd management areas would only be constructed where livestock grazing allotment boundaries coincide with herd management area boundaries. Thus, herd movements generally would not be restricted within the herd management areas and conflicts with other resource uses would continue to be largely addressed on a case-by-case basis.

Parameter – Herd Management Area Establishment
The 24 herd management areas presently existing within the planning area would be retained with a collective area of approximately 5.4 million acres (see **Table 2.5-10** and **Map 2.5.8-1**).

Parameter – Population Management
Herd management areas would be managed with an appropriate management level of 2,141 wild horses. As demonstrated by the recent evaluation survey, many of the current herd management areas lack one or more of the necessary habitat components to sustain their numbers on a year-long basis. Especially in the south end of the planning area, where quality forage is limited and water sources are scarce, herds would be in jeopardy from starvation or dehydration. When herd size grows beyond appropriate management level, such hazards to health and well-being would be intensified during periods of drought. At the same time, the wild horse herds could cause substantial, harmful effects on vegetation resources on both public and private lands. Small (non-viable) herds existing in these herd management areas may be extirpated by natural means.

Some herds would continue to be managed with appropriate management levels as a fixed number until another analysis of appropriate management level has been completed and other herds with appropriate management levels as a range, depending upon the existing decision applicable for each herd. For herd management areas with an appropriate management level established as a single number, gathers would be conducted when that number is exceeded to bring populations to far enough below the appropriate management level to allow for natural population growth over a 3- to 4-year period before the next gather. For herd management areas with an appropriate management level set as a range, the wild horse population would be managed within that range.

Impacts from Other Programs.

Water Resources. Water is a limiting factor for horse herds on several herd management areas within the planning area, affecting not only the basic survival of horses within these areas, but also the distribution of their use and degree of conflict with other animals, including livestock and wildlife. Additional water developments for livestock or wildlife also would benefit wild horses. It is unlikely, however, that the number and location of water sources would be substantially altered under Alternative A.

Vegetation. Vegetation treatment and restoration would continue at levels comparable to or somewhat above historic levels. These restoration treatments would affect wild horse populations where they occur within herd management areas and the total herd management area affected at any one time could be in the tens of thousands of acres. Effects of treatment would be similar to the Proposed RMP but spread over smaller areas of treatments.

Lands and Realty. The lands that are proposed for possible disposal under Alternative A include only about 400 acres within herd management areas and, thus, would not affect wild horses. Any additional parcels disposed of would be subject to additional NEPA review prior to disposal.

Renewable Energy. Impacts from renewable energy development would be the same as discussed for the Proposed RMP.

Travel Management and Off-highway Vehicle Use. Continually increasing recreational demand in the planning area, accompanied by increased off-road vehicle use, would gradually result in increased conflicts with wild horses. Most of the increased recreation and off-highway vehicle use is expected to occur in the southern portions of the planning area where habitat for wild horses is typically of marginal quality and some herd management areas have appropriate management levels of zero. Increasing recreation and transportation areas activities in these herd management areas may result in these herds moving to areas with less noise and activity, potentially resulting in conflicts outside the herd management areas.

Recreation. The primary interactions between wild horses and recreation are those associated with off-highway vehicle use (see paragraph above) and other dispersed recreation activities such as hunting and hiking. In addition, one special recreation management area would be established under Alternative A. Its use is not anticipated to affect wild horse herds.

Livestock Grazing. Management of grazing allotments under Alternative A would be essentially unchanged and would not be expected to result in new impacts on wild horse management. Where they occur, usually where appropriate management levels have not been achieved, existing conflicts for forage and water resources would continue. In all areas, where livestock numbers have been reduced to provide a more balanced use of available resources, such reduction would continue or potentially be reduced further to meet resource management objectives.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that of the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario in the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Watershed Management. The increased forage production on the treated areas would provide improved forage and habitat for livestock, wildlife, and wild horses. Under Alternative A, the additional forage would be allocated 70 percent to livestock and wild horses, with the remaining 30 percent reserved for wildlife in the Schell Resource Area. In the remainder of the planning area, additional forage would be allocated or reserved proportionately among all users. Thus, forage available for wild horses likely would increase on treated acres within herd management areas throughout the planning area.

Fire Management. The impacts under Alternative A would be similar to those under the Proposed RMP except on a smaller scale. This, in the long-term, would result in fewer acres with improved ecological health, vegetation resilience, and overall improved habitat quality; fuels would continue to accumulate in untreated areas; and the probability of major, uncontrollable stand replacing fire events would continue.

Fire suppression activities also may impact wild horses in terms of water withdrawal from local streams and waterbodies, increased human activity and traffic on access routes, and potential spills of fuel and chemicals. These effects would generally be localized and of short duration in comparison to the long-lasting effects of habitat alteration on the burned areas.

Noxious and Invasive Weed Management. Noxious weed management could affect wild horse herds if noxious and invasive weeds occur within the herd management areas to the extent that they replace desirable forage species, thereby reducing availability of quality forage. Some weeds are more toxic to horses than to other types of grazers. Under Alternative A, it is highly probable that the spread of invasive alien species would continue at a rate greater than the rate of weed eradication and vegetation treatment.

Conclusion. Alternative A would maintain several herd management areas that possess marginal or inadequate habitat to sustain wild horse populations at a level that would ensure healthy populations over the long-term, thereby resulting in a high probability for continued conflicts with other resources, conflicts with private land owners, and occasional starvation and dehydration of wild horses. Alternative A would fail to achieve the program goal over the long term.

Alternative B

Impacts from Wild Horses Management Actions.

Parameter – General Wild Horse Management

The general management approach and associated impacts would be the same as the Proposed RMP.

Parameter – Herd Management Area Establishment

Alternative B involves the same six herd management areas proposed under the Proposed RMP. The impacts associated with this change in number and location of herd management areas would be the same as the Proposed RMP.

Parameter – Population Management
The emphasis of wild horse management would be on maintenance of healthy, viable herds at levels sustainable under drought conditions. Impacts would be the same as the Proposed RMP.

Impacts from Other Programs. Impacts to wild horse management related to interactions from water resources, vegetation, fish and wildlife, special status species, renewable energy, geology and mineral extraction, fire management, and noxious and invasive weeds would be the same as described for the Proposed RMP. Interaction effects from the following programs would likely differ from the Proposed RMP.

Lands and Realty. An area of approximately 90,600 acres would be available for potential disposal including approximately 17,400 acres within herd management areas. Potential disposal of lands in these areas would have minimal effects on wild horses on the herd management areas identified under this alternative, and would be unlikely to necessitate a reduction in the appropriate management level of affected herd management areas. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Recreation. The primary impacts resulting from interactions between wild horses and recreation are those associated with off-highway vehicle use (see paragraph above). In addition, nine special recreation management areas totaling approximately 2.7 million acres would be established under Alternative B. Portions of these would overlap with the Eagle, Silver King, Triple B, and Pancake Herd Management Areas. Wild horse viewing is one of the types of recreation anticipated to occur in these areas and the presence of recreation users may affect herd behavior and movement.

Travel Management and Off-highway Vehicle Use. The reduction of both size and number of herd management areas and the substantial reduction in amount of area open to off-highway vehicle use in this alternative would effectively reduce encounters and conflicts between off-road vehicle traffic and wild horse herds. The off-highway vehicle emphasis areas in this alternative do not overlap with the remaining herd management areas. Therefore, impacts of the increasing recreational demand on the planning area on wild horses would be reduced in this alternative compared to Alternative A, but similar to the Proposed RMP.

Livestock Grazing. Management of grazing allotments under Alternative B would include closure of grazing on approximately 3.0 million acres of bighorn sheep habitat, portions of which occur within various herd management areas. Thus, competition for forage and water resources would be reduced in these areas of livestock closure. Other areas of existing conflict would be eliminated or reduced in those areas where herd management area status is dropped and the wild horses are removed.

Watershed Management. Additional forage resulting from vegetation treatment and restoration activities would be allocated to watershed health and wildlife, thus there would be no net impact to wild horses. Watershed treatments may enhance water availability and quality within herd management areas.

Conclusion. Wild horse populations would be brought into balance with the available habitat resources needed to sustain healthy populations over the long-term and prevent damage to the environment and surrounding resources. Vegetation treatments would, in the long term, enhance habitat conditions within the herd management areas to ensure the sustainability of healthy herds maintained at appropriate management levels. Thus, Alternative B would achieve the program goal.

Alternative C

Impacts from Wild Horses Management Actions.

Parameter – General Wild Horse Management

The general management approach and associated impacts would be the same as the Proposed RMP. Wild horse populations would be managed with the same approach for calculating and applying appropriate management level as in the Proposed RMP. Only limited fencing of herd management area boundaries would be done as with Alternative A.

Parameter – Herd Management Area Establishment

Wild horses would be managed in the same reduced set of six consolidated herd management areas as used in the Proposed RMP. The only differences would occur in areas identified for possible disposal where the potential disposal areas would no longer remain in herd management area status. The total area of the herd management areas could be reduced by approximately 66,500 acres in areas identified for proposed land disposals. No land disposals would be permitted to remove the habitat necessary for supporting long-term reproductively viable populations. The impacts associated with this change in number and location of herd management areas would be the similar to those of the Proposed RMP.

Parameter – Population Management

The emphasis of wild horse management would be on maintenance of healthy, viable herds at levels sustainable under drought conditions. Impacts would be the same as the Proposed RMP.

This slight reduction in size of the Eagle and Silver King Herd Management Areas is not considered enough to warrant a change in the proposed appropriate management level for these units.

Impacts from Other Programs. The impacts related to interactions from water resources, vegetation, renewable energy, livestock grazing, geology and mineral extraction, watershed management, and noxious and invasive weed management activities would be the same as or similar to the Proposed RMP. Programs for which the impacts would differ from the Proposed RMP and Alternatives A and B are discussed below.

Lands and Realty. Potential disposal of lands could reduce the herd management areas identified under this alternative by approximately 66,500 acres, possibly necessitating a reduction in the appropriate management level.

Travel Management and Off-highway Vehicle Use. The reduction of both size and number of herd management areas and the substantial reduction in amount of area open to off-highway vehicle use in this alternative would effectively reduce encounters and conflicts between off-road vehicle traffic and wild horse herds. Three of the off-highway vehicle emphasis areas in this alternative do not overlap with the remaining herd management areas. Two areas, however, Silver State and Pancake Summit, overlap almost totally with the Silver King and Pancake Herd Management Areas, respectively. Some degree of impact to the wild horse population in those herd management areas would be expected. However, overall impacts of the increasing recreational demand on the planning area on wild horse management probably would be reduced in this alternative compared to Alternative A, but similar to the Proposed RMP.

Recreation. The primary impacts resulting from interactions between wild horses and recreation are those associated with off-highway vehicle use (see paragraph above). In addition, nine special recreation management areas totaling approximately 2.6 million acres would be established under Alternative C. Portions of these would overlap with the Eagle, Silver King, Triple B, and Pancake Herd Management Areas. Wild horse viewing is one of the types of recreation anticipated to occur in these areas and the presence of recreation users may affect herd behavior and movement.

Watershed Management. Impacts to wild horses would be the same as the Proposed RMP except that additional forage after restoration would be allocated to livestock, and there would be no change in forage availability for wild horses.

Fire Management. Impacts to forage on herd management areas and thereby to wild horses would probably be less in Alternative C than the Proposed RMP or Alternatives A and B during the short term due to aggressive fire suppression. Over the long term, however, this fire suppression approach is expected to result in more large widespread fires, potentially burning major portions of individual herd management areas with subsequent conversion of these areas to herbaceous dominated plant communities.

Conclusion. Wild horse populations would be brought into balance with the available habitat resources needed to sustain healthy populations and prevent damage to the environment and surrounding resources. Alternative C, however, would likely have greater impacts and risks to wild horse populations than the Proposed RMP over the long term due to increased potential for major wildland fires.

Alternative D

Impacts from Wild Horses Management Actions.

Parameter – General Wild Horse Management

Herd management areas would be the same as under Alternative A, but herds would be unmanaged except for removal of wild horses outside the herd management areas. This alternative, however, would focus on eliminating livestock grazing throughout the planning area to protect vegetation and soil resources. This approach could initially make more forage available to wild horses in those herd management areas where horses and livestock currently compete for forage. This alternative also eliminates other discretionary uses of the pubic lands including mineral sale and leasing, lands and realty actions, and many recreational uses. This approach would remove or eliminate most resource use conflicts with wild horses, but it would not alter substantially or remedy the unsuitability of several existing herd management areas for maintaining viable, healthy horse populations in thriving ecological balance with other resources.

Parameter – Herd Management Area Establishment

The 24 herd management areas presently existing within the planning area would be retained with a collective area of approximately 5.4 million acres (see **Table 2.5-10** and **Map 2.5.8-1**).

Parameter – Population Management

Management under this alternative would not constrain population growth within herd management areas. Thus, in the absence of population controls, it is expected that natural population growth at rates of up to 20 percent annually would quickly result in excessive populations and rapid degradation of forage supplies on all herd management areas. Riparian areas within the herd management areas would be particularly vulnerable. As forage supplies become depleted within the herd management areas, it is expected that increasing numbers of animals would move onto adjoining areas where they would be removed. Starvation would be common as would be long-term or permanent damage to the vegetation resource. Foals and old animals would be the most vulnerable to starvation and predation.

Impacts from Other Programs.

Water Resources. Water hauls and other man-made sources of water for livestock would be terminated, thus removing important water sources for wild horses and wildlife as well.

Vegetation. Vegetation treatment and restoration activities would occur under this alternative at about the same scale as Alternative A, but emphasis would be placed on returning previously disturbed sites (including nonnative seedings) to sagebrush or pinyon-juniper communities. Thus, impacts to wild horses would be similar to Alternative A, except that Alternative D would involve a lower overall probability of achieving and maintaining desired range of vegetation conditions within the herd management areas. This would lead to greater impacts on the health of wild horse populations.

Lands and Realty. This alternative emphasizes a policy of “No net loss of lands in the planning area.” No new rights-of-way, permits, leases, and easements would be granted. This approach would not directly affect wild horse herds.

Renewable Energy. Since rights-of-way for renewable energy projects would not be granted, impacts to wild horses would not occur.

Travel Management and Off-highway Vehicle Use. Almost all of the planning area would be closed to off-highway vehicle use, effectively eliminating any conflict of such uses with wild horse herds.

Recreation. Alternative D would involve elimination of organized recreational events, thereby eliminating a potential use conflict in wild horse herd management areas.

Livestock Grazing. Livestock grazing would be eliminated under Alternative D. This would remove the conflict between livestock and wild horse for forage, but also would eliminate some of the water sources used by the wild horse herds.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Watershed Management. After restoration activities have occurred to meet Standards for Rangeland Health at the watershed level, additional forage would be allocated to wild horses within herd management areas, thus providing increased forage for herds using these treated areas.

Fire Management. This alternative would involve the use of fire suppression only for human-caused events and those that threaten human life and private property. For both the short term and the long term, this alternative would result in substantially greater risk for large, widespread fires that could adversely affect entire herd management areas or large portions thereof.

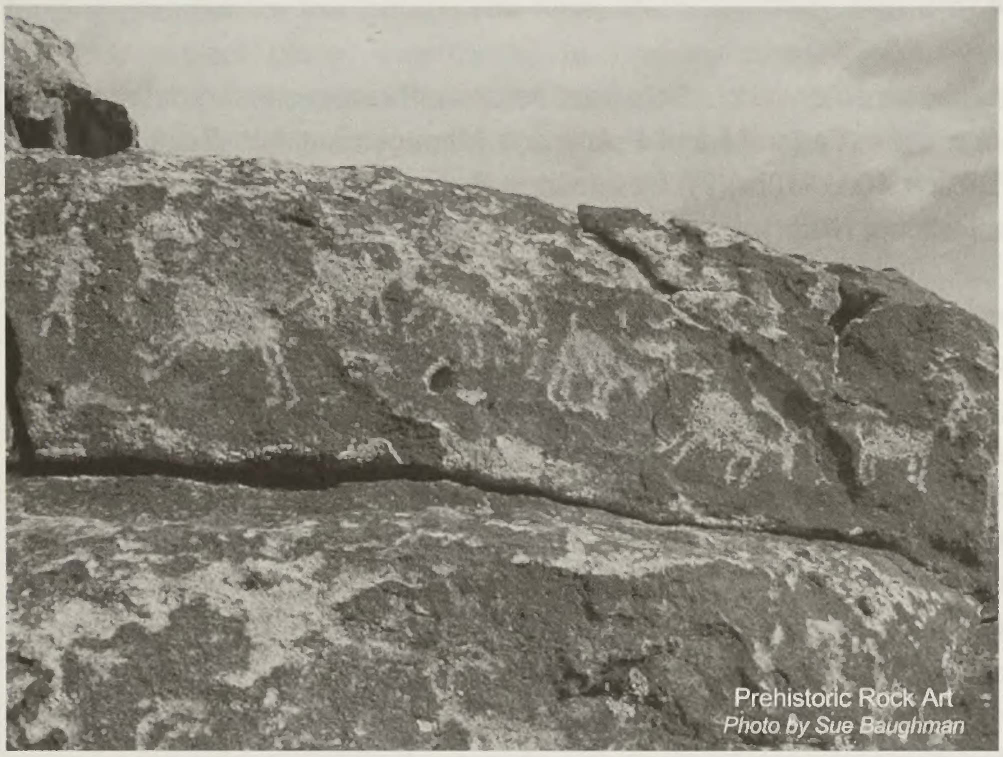
Noxious and Invasive Weed Management. Management would be the same as Alternative A except selected groups of herbicides would not be allowed. Thus, effective and efficient control of some weed species may not be achieved. This change would have few direct effects relative to wild horses, but would substantially reduce the effectiveness of weed control in the planning area. This approach would tend to facilitate the establishment and spread of various noxious and invasive weeds.

Conclusions. The limited management approach in Alternative D for the existing 24 herd management areas and absence of fire management would result in rapid deterioration of ecological systems within these areas and likely starvation of many animals as populations increase beyond the support level of their habitat. Therefore, Alternative D would fail to achieve the stated goal for this program.

4.9 Cultural Resources

Impact Issues

Cultural resources include, but are not limited to, historic cemeteries and townsites, rockshelters, caves, rock art, and Paleoindian sites. The primary impact mechanisms that could affect cultural resources within the planning area include off-highway vehicle and recreational use, minerals development, land disposal, fire, special designations, and livestock grazing. Some of these mechanisms would have a negative impact on cultural resources, which would be mitigated through project abandonment, redesign, and, if necessary, data recovery. However, some of these mechanisms may have a positive or beneficial impact on cultural resources, such as protection under an ACEC designation.


Prehistoric Rock Art
Photo by Sue Baughman

Any program, activity, or project has an effect on a cultural resource if it alters any of the characteristics or criteria that may qualify the resource for inclusion on the National Register of Historic Places or otherwise affects a cultural property's legally protected status. Impacts to cultural properties are considered adverse if the effect diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Negative or adverse effects can include, but are not limited to: physical destruction of or damage to all or part of a property; alteration of a property (e.g., restoration, rehabilitation, stabilization); removal of a property from its historic location; or, transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation.

Assumptions for Analysis

None.

Interactions with Other Programs

The cultural resource management program within the planning area potentially would be affected by actions within the resource management programs for vegetation, wild horses, visual resources, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, geology and mineral extraction, fire management, noxious and invasive weed management, and special designations.

Goal

Identify, preserve, and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations (Federal Land Policy and Management Act, Section 103(c), 201(a), and (c); National Historic Preservation Act, Section 110(a); Archaeological Resources Protection Act, Section 14 (a)).

Seek to reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration, or potential conflict with other resource uses (Federal Land Policy and Management Act, Section 103(c), National Historic Preservation Act, Section 106, 110(a)(2)) by ensuring that all authorizations for land use and resource use will comply with the National Historic Preservation Act, Section 106.

Northeastern Great Basin Resource Advisory Council Standard. Land use plan will recognize cultural resources within the context of multiple use.

Objective

To protect and maintain cultural resources on BLM-administered land in stable condition. Appropriate management actions will be determined after evaluation and allocation of cultural resource use categories through cultural resource project plans.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to cultural resources also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Cultural Resources Management Actions. Under the Proposed RMP, the cultural landscape around National Historic Trails would be managed and protected in compliance with the National Historic Preservation Act and BLM policy. An area of direct effect around the trails would be established as 1 mile on each side of the trail centerline, although in some cases, the area of potential effect may be larger or smaller than 1 mile on each side of the centerline. The Proposed RMP focuses on management of the setting of the Pony Express National Historic Trail and the California Historic Trail, of which the planning area manages about 15 miles. All cultural properties in the decision area, whether already recorded or projected to occur on the basis of existing data synthesis, including cultural landscapes, or not projected to occur, but later identified through inventory, would be allocated to specific uses according to their nature and relative preservation value. Once an cultural resource receives a cultural resource use allocation, it would be managed for that use and other resource uses would be managed in order to be compatible with the cultural resource use allocations. The use allocations would provide management direction, planning, and funding priorities for the thirteen site types identified. They also would provide priorities for writing cultural resource project plans, inventories, restoration, stabilization, rehabilitation, interpretation, protection, monitoring, and research. See the Glossary for the definitions of each resource use allocations and Section 2.4.9 for designations of specific use allocations for site types found in the planning area.

Impacts from Other Programs.

Vegetation. Vegetation management involves treatments to achieve healthy, resilient, and diverse ecological systems. Vegetation treatments typically involve direct manipulation of vegetation resources and include such activities as burning, chaining, tree cutting, and plowing, all of which can negatively affect cultural resources. Treatment projects would be subject to additional NEPA review and impacts to cultural resources would be avoided or mitigated in adherence to the National Historic Preservation Act and Federal Land Policy and Management Act. Vegetation management also may involve the elimination or modification of activities currently degrading watershed conditions, such as vehicle traffic, hiking, and livestock and wild horse grazing would benefit cultural resources by restoring cultural landscapes and reducing impacts to archaeological sites. Under the Proposed RMP, the increase in vegetation treatments would benefit cultural resources by increasing the percent of the planning area inventoried for cultural resources; however, the potential for indirect and inadvertent as well as direct impacts would increase proportionally to the amount of land undergoing ground disturbing vegetation treatment. Restoration projects would be subject to additional NEPA review, and impacts would be avoided or mitigated in adherence to the National Historic Preservation Act and Federal Land Policy and Management Act.

Wild Horses. Cultural resources are impacted by wild horse use in similar manner to livestock grazing impacts. These impacts are trampling, wallowing, and trailing, especially near fenced or unfenced watering areas, stream banks, and spring sources. The impacts caused by wild horses are nearly indistinguishable from those caused by livestock. These impacts would be mitigated on a case-by-case basis when discovered. Under the Proposed RMP, impacts to cultural resources would be reduced as overall horse numbers would be reduced from current management levels. Possible impacts could occur during gather operations but would generally be avoided in compliance with the National Historic Preservation Act and Federal Land Policy and Management Act.

Visual Resources. Under the Proposed RMP, approximately 3.5 million acres would be managed as Visual Resource Management Class I or II. This potentially would result in indirect protection of settings and landscapes of National Register eligible cultural resources.

Lands and Realty. No unmitigated impacts to cultural resources are anticipated as a result of potential land disposals. Any parcels disposed of would be subject to NEPA review prior to disposal in adherence to the National Historic Preservation Act and the Federal Land Policy and Management Act. Implementation of best management practices and proposed management actions would prevent lands identified for possible disposal from being transferred to other ownership without mitigation if they contain sites determined eligible for inclusion to the National Register of Historic Places. Lands and realty management would benefit cultural resources through acquisition of culturally sensitive properties.

Rights-of-way within newly designated corridors (0.5- to 0.75-mile-wide under this alternative) would result in a greater number of impacts to cultural resources compared to current management under which no additional corridors would be designated. Applicants for rights-of-way for utilities and communication sites would be encouraged to locate such activities within designated corridors or previously disturbed areas; therefore, the potential for impacts to cultural resources associated with these types of rights-of-way would be the same as those occurring under current management. This use consolidation would benefit cultural resources by ensuring public information about site stewardship and monitoring would occur in these corridors. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Renewable Energy. Ground-disturbing activities associated with renewable energy development (i.e., wind or solar energy) would result in mitigated impacts to cultural resources. Authorization of renewable energy projects would be evaluated using an interdisciplinary approach and site-specific NEPA analysis would occur for all renewable energy development projects. Under the Proposed RMP, wind and solar energy and biomass resources could be developed (see Section 2.4.13). Direct impacts to cultural resources on the 4,000 acres that could be disturbed for wind energy development would be expected but mitigated in adherence to the National Historic Preservation Act and Federal Land Policy and Management Act. Renewable energy development areas will test site sensitivity models developed for the Ely RMP/EIS and will assist with predicting the severity of impacts to cultural sites. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS (see Appendix F, Section 3).

Travel Management and Off-highway Vehicle Use. Off-highway vehicle activities, particularly if unregulated, are increasingly responsible for damage to all types of cultural/archaeological resources. Compaction, altered surface water drainage, and erosion are all negative impacts to the landscape and, by extension, to cultural resources. The weight and torque of off-road vehicles easily can destroy fragile surface artifacts. In addition, as off-highway vehicles take people into generally unvisited or hard-to-reach areas, the integrity of cultural/archaeological resources would be at greater risk of illegal collection, vandalism, surface disturbance, and site damage. The impacts caused by dispersed off-highway vehicle activity would not be mitigated unless discovered. Under the Proposed RMP, direct and indirect impacts to cultural resources would be substantially reduced. Approximately 1.1 million acres would be closed to off-highway vehicle use and approximately 10.3 million acres would be managed with use limited to designated roads and trails. Designations of roads and trails would occur subsequently at the implementation level.

Recreation. Recreation development can be both beneficial and detrimental in its relationship to cultural resources. A greater use of interpretive developments can increase public awareness and education, which can result in decreased illegal collecting and site vandalism. Conversely, increased development, in general, brings more people to the area and more visitors usually means greater illegal collection and site damage. Developed recreation can be slightly more detrimental to cultural resources than dispersed recreation because it tends to concentrate people in small, predictable areas. Dispersed recreation (e.g., hunting, hiking) tends to attract visitors to places that have not received much use in the past; however, this type of use is much less predictable and measurable. The Proposed RMP designates five new special recreation management areas. These designations are likely to attract additional recreational use to these public lands. The potential increase in recreational activity could lead to greater indirect impacts to cultural resources than under the current management.

Special recreation permit areas would be established to provide opportunities for motorcycle competitive events. Direct impacts to cultural/archaeological resources located within the permit areas would be mitigated through adherence to the National Historic Preservation Act and Federal Land Policy and Management Act. However, it is anticipated that a greater number of indirect impacts to cultural/archaeological resources located in the vicinity of the motorcycle events would occur due to the increased number of visitors to these areas. Indirect impacts would be mitigated on a case-by-case basis as discovered.

Livestock Grazing. Direct impacts associated with range improvements would be mitigated; however, other impacts may occur as a result of livestock grazing activities. Livestock congregation and trailing at or across cultural resource site locations can damage artifacts and the contexts in which they occur. Cattle shading and rubbing can damage standing historic structures and petroglyph and pictograph panels. Excessive trampling at spring sources and along stream banks, cattle trailing, and poorly managed grazing can all lead to a denuding of protective vegetation cover and create indirect impacts to cultural/archaeological resources by accelerating natural erosion and exposing artifacts to illegal surface collection and vandalism. These types of impacts generally would be localized at particular site locations, and could range from short-term to long-term to irreversible. Livestock grazing will continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing will be maintained for 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use will be made as needed to meet or progress toward achievement of the standards. These actions would lessen the impacts to the resource. Better management and restored forage base through restoration activities could reduce impacts or could be used to draw animals away from sensitive areas, particularly accompanied by awareness briefings to permittees. Possible impacts to cultural resources would occur during construction of range improvements (troughs, pipelines, fencelines, etc.). Impacts to cultural resources would be avoided or mitigated in compliance with the National Historic Preservation Act and Federal Land Policy and Management Act.

Under the Proposed RMP, there would be fewer acres available for livestock grazing compared to current management on approximately 40 acres in the proposed Snake Creek Indian Burial Cave ACEC and 80 acres on the proposed Baker Archaeological Site ACEC. This would reduce impacts by livestock to cultural resources in the planning area.

Geology and Mineral Extraction. Under the Proposed RMP and under current management, surface-disturbing activities associated with mineral exploration and development would result in mitigated impacts (which may include data recovery) to cultural resources. The potential for indirect and inadvertent impacts would increase proportionally to the amount of land developed, which is expected to total approximately 17,100 acres over the reasonably foreseeable future. Fluid minerals management within the Sunshine Locality National Register District would be changed to a combination of no surface occupancy around the perimeter and closed within the center. Impacts to cultural resources associated with mineral extraction would be avoided or mitigated (which may include data recovery) in compliance with the National Historic Preservation Act and Federal Land Policy and Management Act, and best management procedures for mineral leasing.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available), and other tools would be used to the greatest extent practical under the Proposed RMP. This alternative has the potential for direct as well as indirect and inadvertent impacts to cultural resources as not all cultural resources are fire sensitive, but all are fire suppression sensitive. Planned fires would have less impact on cultural resources than catastrophic wildland fires. Areas proposed for prescribed burning would be inventoried for cultural/archaeological resources and impacts avoided or mitigated. Prescribed fires can indirectly impact archaeological sites by increasing short-term ground surface visibility. The greater visibility makes artifacts more accessible and can lead to increased illegal collection. These short-term impacts are mitigated through prior inventory, systematic surface artifact collection, and post-fire monitoring. Impacts to cultural resources would be avoided or mitigated in compliance with the National Historic Preservation Act and Federal Land Policy and Management Act.

Noxious and Invasive Weed Management. Treatment methods for noxious and invasive weed control include chemical, mechanical, cultural, or biological. Chemical treatments would negatively impact cultural resources (impacting dating accuracy) (BLM 2004a; BLM 2005c), and ground disturbing mechanical treatments can negatively impact cultural resources by disturbance/destruction of the resource. These impacts would primarily be mitigated through avoidance or data recovery in adherence to the National Historic Preservation Act.

Special Designations. Special designations (e.g., ACECs), with an emphasis on natural values, would benefit cultural resources by protecting and preventing irreparable damage to important cultural values, as well as historic and scenic values. The special designation would reduce or eliminate surface disturbances, which often are caused by activities such as off-highway vehicle use, grazing, range improvements, rights-of-way placements, and mineral entry. Restricting these activities would result in increased ground cover, leading to a reduction in soil erosion, which would help to maintain the integrity of cultural sites. While a special designation may emphasize one or more unique resource, other existing multiple-use management can continue within a special designation so long as the uses do not impair the values for which the area was designated.

Under the Proposed RMP, 20 ACECs would be designated, and 8 of these would be designated to protect and preserve relevant and important cultural values. These would include Baker Archaeological Site, Hendry's Creek/Rock Animal Corral, Honeymoon Hill/City of Rocks, Mount Irish, Pahroc Rock Art, Shooting Gallery, Snake Creek Indian Burial Cave, and Swamp Cedar. Designation of these ACECs would help protect cultural resources. Back country byways are not expected to affect cultural resources.

Forest/Woodland and Other Plant Products. Allowing fuelwood harvest throughout the entire planning area (except some restricted locations) could potentially impact cultural resources in areas where surveys have not been completed. Impacts would be mostly to historic features associated with or connected to pinyon and juniper trees. The amount of impacts to these features is expected to be minimal based on the anticipated level of harvest activities and locations where harvest will take place.

Conclusion. There would be a higher level of protection of cultural resources through use allocations, with 100 percent of the sites determined eligible to the National Register of Historic Places allocated and managed for Conservation, Scientific, and Public Use, and the designation of 8 new ACECs. There also would be more protection of cultural/archaeological resources than current management due to the decrease in lands open to off-highway vehicle use, wild horses, and livestock grazing. The level of protection from impacts associated with fire management and recreation activities would be greater than current management. The Proposed RMP would meet the goals for the cultural resources program, including the Resource Advisory Council Standards.

Alternative A

Impacts from Cultural Resources Management Actions. The cultural landscape around National Historic Trails would be managed and protected in compliance with the National Historic Preservation Act and BLM policy. An area of direct effect around the trails would be established as 1 mile on each side of the trail centerline, although in some cases, the area of potential effect may be larger than 1 mile on each side of the centerline. Alternative A focuses on management of the setting of the Pony Express National Historic Trail and the California Historic Trail, of which the Ely Field Office manages about 15 miles.

Class II inventories (sample surveys) would be conducted in areas identified as high potential for aboriginal site occurrence (e.g., rock art sites, rockshelters, caves, toolstone sources or quarries, large or complex prehistoric sites and camps, agave roasting pits, antelope walls, geoglyphs, and intaglios [i.e., engraved designs]). Rock art sites, historic sites, agave roasting pits, antelope walls, geoglyphs, and intaglios would be monitored for vandalism and natural deterioration.

A Cultural Resources Project Plan would be developed for the Mount Irish Archaeological District, Delamar townsite, and Sunshine Locality National Register District. The plan would outline protection measures and discuss use allocation objectives for these sites, as well as specify actions to be taken under the plan. The Delamar townsite and cemetery would be inventoried to determine the cultural and historical values.

Under Alternative A, cultural resources would continue to be managed for future Cultural Resource Use Allocations. Direct impacts to historic properties eligible to the National Register of Historic Places would be avoided or mitigated in accordance with federal and state laws. Indirect impacts in the form of illegal collecting, vandalism, or inadvertent damage to cultural/archaeological resources would continue to increase over time as the number of visitors to the area increases.

Impacts from Other Programs. Impacts to cultural resources from the noxious and invasive weed management program would be the same as described for the Proposed RMP.

Vegetation. Vegetation restoration and management activities would be undertaken at a relatively low level, and implementation primarily would be in reaction to changes that occur from events such as fire or other disturbance. Similarly, effects on cultural resources would be low to moderate. Restoration treatments would be subject to NEPA review and impacts to cultural resources would be avoided or mitigated in adherence to the National Historic Preservation Act and Federal Land Policy and Management Act.

Wild Horses. Wild horses would be managed within 24 management areas including several areas where scarcity of forage and water result in localized concentrations of use which can be destructive for any cultural/archaeological resources in the vicinity.

Visual Resources. Management of approximately 1.7 million acres under Visual Resource Management Classes I and II would provide less protection of the visual setting where cultural/archaeological resources occur than the Proposed RMP.

Lands and Realty. Cultural resource impacts associated with potential land disposals would be similar to those identified for the Proposed RMP. The negative impacts created by the construction of rights-of-way (e.g., transmission lines, pipelines, and communication sites) would be mitigated by adherence to the National Historic Preservation Act and Federal Land Policy and Management Act. No additional corridors would be designated and all linear rights-of-way would be encouraged to locate within existing designated corridors. Under this alternative, the number of acres withdrawn from mineral entry would be determined on a case-by-case basis.

Renewable Energy. Impacts to cultural/archaeological resources would be similar to those described for the Proposed RMP and would be avoided or mitigated in compliance with the National Historic Preservation Act and Federal Land Policy and Management Act. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS (Appendix F, Section 3).

Travel Management and Off-highway Vehicle Use. It is anticipated that occurrences of surface disturbance, illegal collecting, and vandalism associated with off-highway vehicle use would be high due to the open class use designation in the planning area.

Recreation. Recreation development projects and planned off-highway vehicle events would be cleared and impacts to cultural resources mitigated through adherence to the National Historic Preservation Act and Federal Land Policy and Management Act. No organized off-highway vehicle events would be permitted in the Baker Archaeological Site or Garrison Archaeological Site areas, thereby providing some level of resource protection. The effects of dispersed recreation would be mitigated on a case-by-case basis as discovered.

Livestock Grazing. Livestock grazing impacts and allotment evaluations would continue as described in the Proposed RMP. Impacts associated with livestock activities would be mitigated on a case-by-case basis as discovered.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that of the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Fire Management. The use of prescribed fire, wildland fire use (approximately 3.6 million acres available) and other tools would not be used to the greatest extent practical as under the Proposed RMP. Impacts from Alternative A would be similar to those in the Proposed RMP. Under Alternative A, puebloan sites would be protected from vehicular traffic associated with fire suppression in the event of fire on or near these sites. Existing standard operating procedures would protect fire-sensitive cultural resources (e.g., rock art sites, historic buildings and structures) located within fire management polygons.

Special Designations. No new ACECs would be designated. The Kane Springs, Mormon Mesa, and Beaver Dam Slope ACECs previously were established and would be retained under Alternative A. These ACECs are managed primarily for the protection of the desert tortoise and would be less important in protecting cultural resources.

Conclusion. Cultural resources would continue to be managed for future resource use allocations. Indirect impacts associated with off-highway vehicle use, wild horses, livestock grazing, and recreational activities would continue to occur under existing management. Alternative A would not meet the goals for the cultural resources program but would meet the Resource Advisory Council Standards.

Alternative B

Impacts from Cultural Resources Management Actions. Cultural resource impacts as a result of program-specific management activities would be similar to those described for the Proposed RMP; however, the magnitude of effects would vary based on the resource use allocations identified for this alternative (see Section 2.6.9, Cultural Resources).

Impacts from Other Programs. Impacts to cultural resources from vegetation, wild horses, visual resources, renewable energy, travel management and off-highway vehicle use, geology and mineral extraction, fire management, and noxious and invasive weed management essentially would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Lands and Realty. Cultural resource impacts associated with possible land disposal management activities would be the same as described for the Proposed RMP. Under Alternative B, rights-of-way within newly designated corridors (1.0-mile-wide under this alternative) potentially would result in a greater number of cultural resources impacts. However, all linear rights-of-way related to fiber optic cables and specific transmission lines and pipelines would be located within designated corridors; thereby, reducing dispersed rights-of-way and resulting in fewer potential impacts to cultural resources. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Recreation. Indirect impacts to cultural resources are expected to increase because there would be greater numbers of special recreation management areas compared to the Proposed RMP.

Livestock Grazing. It is anticipated that livestock grazing management activities under Alternative B would result in fewer impacts to cultural resources compared to Alternative A and the Proposed RMP, because there would be a decrease of approximately 3.0 million acres (bighorn sheep habitat) in the areas available for livestock grazing (see Section 2.6.8). Better management and restored forage base through restoration activities could slightly reduce impacts or could be used to draw animals away from concentrating in or near sensitive areas.

Special Designations. Eighteen ACECs would be designated and 10 of these would be designated to protect and preserve relevant and important cultural values. These would include Baker Archaeological Site, Ward Mining District, Snake Creek Indian Burial Cave, Shooting Gallery, Hendry's Creek/Rock Animal Corral, Honeymoon Hill/City of Rocks, Mount Irish, Pahroc Rock Art, Osceola/Osceola Ditch, and Swamp Cedar. Designation of these ACECs would help protect cultural/archaeological resources.

Conclusion. Management of cultural resources would be the same as the Proposed RMP. The level of protection from recreation activities would be greater than the current management. Alternative B would meet the goals for the cultural resources program, including the Resource Advisory Council Standards.

Alternative C

Impacts from Cultural Resources Management Actions. Cultural resource impacts as a result of program-specific management activities would be similar to those described for the Proposed RMP; however, the magnitude of effects would vary based on the resource use allocations identified for this alternative (see Section 2.7.9, Cultural Resources). The level of protection would be lower as more sites would be allocated as Discharged from Management.

Impacts from Other Programs. Cultural resources impacts associated with wild horses, visual resources, and renewable energy, geology and mineral extraction, and noxious and invasive weed management essentially would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. Vegetation restoration activities would be similar in magnitude to the Proposed RMP; however, treatments would focus on creation of plant communities conducive to the commodity emphasis of this alternative. These treatments would involve greater reliance on mechanical and chemical treatments as opposed to prescribed fire. This approach would result in greater potential impacts to cultural resources.

Lands and Realty. Cultural resources impacts associated with possible land disposals would be the same as those identified for the Proposed RMP except for the increased acreage available for possible disposal. Under Alternative C, cultural resources impacts associated with rights-of-way within newly designated corridors would be the same as described for the Proposed RMP, with the exception that these corridors would be 3 miles in width. All linear rights-of-way related to fiber optic cables and specific transmission lines and pipelines would be encouraged to locate within designated corridors; therefore, the potential for cultural resources impacts associated with these types of rights-of-way would be the same as described for the Proposed RMP.

Travel Management and Off-highway Vehicle Use. Reduced impacts to cultural resources would be similar to the Proposed RMP except approximately 32,000 acres would be open to off-highway vehicles on the dry lakebeds in Delamar, Garden, and Dry Lake valleys. The “open” designation on these dry lakebeds would concentrate off-highway vehicle use in these areas. The off-highway vehicle “open” designation would result in impacts to cultural resources on the margins of the dry lakebeds in all three valleys. In addition, this designation would result in impact to cultural resources located on the floor of Garden Valley dry lakebed(s).

Recreation. Indirect impacts to cultural resources are expected to increase because there would be greater numbers of special recreation management areas, special recreation permit areas, and routes for motorcycle and truck events compared to the Proposed RMP.

Livestock Grazing. There would be a slight decrease in the areas available for livestock grazing (see Section 2.7.8), and better management and restored forage base through restoration activities could slightly reduce impacts or could be used to draw animals away from concentrating in or near sensitive areas.

Impacts of livestock grazing on cultural resources would be generally similar to the Proposed RMP and livestock grazing and allotment evaluations would continue as described in the Proposed RMP.

Fire Management. The full suppression approach of Alternative C would initially reduce potential impacts to cultural resources but could increase impacts when fuel accumulations reach the point that suppression efforts fail to control large fires.

Special Designations. Twenty ACECs would be designated, of which 10 would be designated to protect and preserve relevant and important cultural values. The 10 new ACECs would be the same as those identified for Alternative B.

Conclusion. Cultural resource use allocations would protect cultural/archaeological resources; however, there would be a lower level of protection since more sites would be allocated as Discharged from Management. The decrease of lands open to off-highway vehicle use would provide more protection of cultural resources than current management. The level of protection from impacts associated with recreation and fire management would be lower than Alternative A and the Proposed RMP. Alternative C would meet the goals for the cultural resources program, including the Resource Advisory Council Standards.

Alternative D

Impacts from Cultural Resources Management Actions. Cultural resources impacts as a result of program-specific management activities would be similar to those described for the Proposed RMP; however, the magnitude of effects would vary based on the resource use allocations identified for this alternative (see Section 2.8.9, Cultural Resources).

Impacts from Other Programs. Cultural resources impacts associated with wild horses and noxious and invasive weed management activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. Vegetation restoration activities would not be accelerated in comparison to the Proposed RMP. Restoration would be implemented primarily in areas dominated by invasive nonnative species or seeded nonnative species. Impacts to cultural resources would be similar to but less than the Proposed RMP.

Visual Resources. Approximately 11.5 million acres would be managed as Visual Resource Management Classes I and, II potentially resulting in more indirect protection for cultural/archaeological resources than under the Proposed RMP.

Lands and Realty. There would be no net loss of public lands in the decision area. As a result, there would be a lower potential for impacts to cultural resources as activities on lands retained under BLM jurisdiction would be subject to the requirement of the National Historic Preservation Act and Federal Land Policy Management Act. Under Alternative D, there would be no new land use authorizations such as right-of-way and communication site grants, so there would be no impacts to cultural/archaeological resources.

Renewable Energy. There would be no impact to cultural resources from renewable energy development because there would be no new land use authorizations.

Travel Management and Off-Highway Use. Fewer impacts to cultural resources would be anticipated, since no areas would be open to off-highway vehicle use and 11.0 million acres would be closed to off-highway vehicle use.

Recreation. No motorcycle and truck races would be permitted thus eliminating impacts from these events on cultural resources.

Livestock Grazing. Fewer impacts to cultural resources would occur compared to the Proposed RMP because livestock grazing would be eliminated throughout the decision area.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development would be much less in Alternative D than in the Proposed RMP.

Fire Management. Alternative D would emphasize reduced suppression of wildland fires except to protect life and property in the long term. Under this alternative, effects would be higher than the Proposed RMP with high potential for major, widespread fires.

Special Designations. No ACECs for the protection of cultural resources would be designated under Alternative D; however, the reduction of other activities would reduce the need for special management. Therefore, impacts to cultural resources are expected to be minimal.

Conclusion. More cultural resources would be allocated and managed for Conservation Use, which would provide a higher level of protection compared to the Proposed RMP. The level of protection of cultural/archaeological resources from off-highway vehicle use, recreation, and livestock grazing would be greater than all other alternatives. Fire management activities would pose a higher risk to cultural resources than all other alternatives. Alternative D would meet the goals for the cultural resources program, but would not meet the Resource Advisory Council Standards.

4.10 Paleontology

Impact Issues

Impacts to paleontological resources would be measured by physical damage to fossil-bearing formations through excavation or surface disturbance. The primary impact mechanisms that could affect paleontological resources within the planning area include off-highway vehicle use, minerals development, land disposal, and special designations. However, some of these mechanisms may have positive or beneficial impacts on paleontological resources.

Fossils are part of the geological units in which they occur and may be extensively distributed both vertically and horizontally throughout the unit. Fossil localities noted to occur within a given geologic unit indicate that the unit may yield fossils throughout its entire areal extent, which may be several hundred or several thousand square miles. Thus, knowledge of the outcrop pattern of geologic units, and the kinds and quality of the fossils produced by such units, is a critical management tool for land-use decision-making where fossils may be involved.

Assumptions for Analysis

None.

Interactions with Other Programs

The paleontology management program within the planning area potentially would be affected by actions within the resource management programs for lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, and geology and mineral extraction.

Goal

Identify and manage at-risk paleontological resources (scientific value), preserve and protect vertebrate fossils through best science methods, and promote public and scientific use of invertebrate and paleobotanical fossils.

Objective

To manage fossil sites with high scientific value in a stable condition, while allowing appropriate research and casual public collecting.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to paleontological resources also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Paleontology Management Actions. All paleontological resources in the decision area, whether already recorded or projected to occur on the basis of existing data synthesis, would be allocated for specific uses according to their nature and relative preservation value. The use allocations would reduce impacts thereby increasing the preservation of paleontological resources. See Section 2.4.10 for the definitions of use allocations and their application for specific types of paleontological resources. The no-fee registration system at trilobite collection localities would allow the Ely Field Office to protect the resource while allowing for reasonable collecting by the public.

Impacts from Other Programs.

Lands and Realty. Potential land disposals would not impact known paleontological resources, because the resources would be surveyed prior to land transfers and important paleontological resources would be eliminated from possible disposal parcels. Acquiring lands containing sensitive fossil localities would protect paleontological resources for future public and scientific use. Proposed rights-of-way would be inventoried prior to construction. Fossil specimens located during inventory would be documented and collected. The documentation would add to the body of knowledge about paleontological resources in the planning area; however, any discovered paleontological resources located in proposed disturbance areas would be permanently removed from their original context. Rights-of-way within newly designated corridors (0.5- to 0.75-mile-wide under this alternative) potentially would result in impacts to paleontological resources. All linear rights-of-way, related to fiber optic cables, transmission lines, pipelines, and communication sites would be encouraged to locate within designated corridors and existing sites.

Renewable Energy. Based on estimates of the reasonably foreseeable development of renewable energy resources, approximately 4,000 acres within the planning area could be affected by construction activities. Such activities would be subject to additional site-specific environmental investigation and NEPA analysis prior to development. Appropriate protection or mitigation measures would be identified at that time.

Travel Management and Off-highway Vehicle Use. Unrestricted off-highway vehicle use damages paleontological resources by soil compaction, altered surface water drainage, and erosion. Repeated hill climbing and damage to slopes, soils, and vegetation would result in damage to paleontological resources by directly wearing down rock formations or causing accelerated erosion. Fewer impacts to paleontological resources would be anticipated since there would be a decrease in the area open to off-highway vehicle use and an increase in the area closed to off-highway vehicle use compared to current management.

Approximately 10.3 million acres would be classified as limited, thereby reducing impacts outside of designated roads and trails.

Recreation. The demand for use of both vertebrate and invertebrate fossils has increased in the planning area, as well as the casual-use and collection of invertebrate fossils, in particular trilobites, by rockhounds and fossil collectors. Common invertebrate fossils, such as plants, mollusks, and trilobites may be collected for personal use in reasonable quantities, but may not be bartered or sold. A no-fee registration system would be established for known trilobite localities. It is anticipated that the no-fee registration system would be used as a management tool to track the number of people visiting these localities and associated impacts. If necessary, trilobite collecting localities would be closed if increased use is impacting the resource.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario, would be disturbed throughout the 11.5 million acre decision area. Mineral extraction would have the potential to affect paleontological resources. A review of paleontological resources would be required prior to ground-disturbing activities associated with mineral development, as well as documentation or collection of specimens discovered during operations. The documentation would add to the body of knowledge about paleontological resources in the planning area. Selected paleontological resources discovered in proposed disturbance areas would be placed in museums. This process would add to the body of scientific knowledge.

Conclusion. Paleontological resources would be protected under the Proposed RMP, because they would be allocated and managed for Scientific, Conservation, and/or Public Use. An increase in the number of acres withdrawn from mineral entry and a decrease in lands open to off-highway vehicle use would reduce impacts to paleontological resources. The no-fee registration system would increase the protection of known trilobite localities by tracking the amount of use and associated impacts. The Proposed RMP would meet the goal for the paleontology program.

Alternative A

Impacts from Paleontology Management Actions. Paleontological resource impacts associated with program-specific management activities would be the same as described for the Proposed RMP. There would be no registration system at trilobite collecting localities, which would make if difficult to track and manage the intensity of use of the resource.

Impacts from Other Programs. Impacts to paleontological resources associated with lands and realty and renewable energy would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Travel Management and Off-highway Vehicle Use. The potential for impacts to paleontological resources would be high due to the open use classification on 9.8 million acres in the decision area.

Recreation. No registration system currently is in place for invertebrate fossil collecting. In the planning area, illegal commercial collecting of trilobites and individuals collecting far more than is considered "reasonable quantities" of trilobites for personal use is occurring, both of which impact the resource and are expected to continue.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals, and mineral materials would be relatively the same as in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Conclusion. Paleontological resources would be managed the same as the Proposed RMP, but no registration system would be in place for trilobite collecting. The amount of unauthorized collecting of common invertebrate fossils (e.g., trilobites) and impacts associated with off-highway vehicle use would continue to increase as recreation and visitor use increases. Alternative A would not meet the goal for the paleontology program.

Alternative B

Impacts from Paleontology Management Actions. Paleontological resource impacts associated with program-specific management activities would be the same as described for the Proposed RMP.

Impacts from Other Programs. Impacts to paleontological resources associated with renewable energy, travel and off-highway vehicle use, recreation, and geology and mineral extraction would be the same as described for the Proposed RMP.

Lands and Realty. Wider corridors are allowed for under this alternative compared to the Proposed RMP; therefore, additional disturbances could be associated with this alternative.

Conclusion. Paleontological resources would be protected, because they would be allocated and managed for Scientific, Conservation, and/or Public Use. An increase in the number of acres withdrawn from mineral entry and a decrease in lands open to off-highway vehicle use would reduce impacts to paleontological resources. The no-fee registration system would increase the protection of known trilobite localities by tracking the amount of use and associated impacts. Alternative B would meet the goal for the paleontology program.

Alternative C

Impacts from Paleontology Management Actions. Paleontological resource impacts associated with program-specific management activities would be the same as described for the Proposed RMP. The fee-base registration system for trilobite collecting would be expected to reduce the intensity of collecting and impacts to the resource.

Impacts from Other Programs. The level of impacts to paleontological resources associated with lands and realty, renewable energy, travel management and off-highway vehicle use, and geology and mineral extraction would be similar to or the same as those identified for the Proposed RMP. The following interrelated program would result in different impacts compared to the Proposed RMP.

Recreation. Under this alternative, a fee-based registration system would be established for known trilobite localities. It is anticipated that the fee-based registration system would be used as a management tool to track the number of people visiting these localities and associated impacts. If necessary, trilobite collecting localities would be closed if increased use is impacting the resource.

Conclusion. Management of paleontological resources would be the same as the Proposed RMP, with the exception of the registration system. The fee-based registration system could reduce the number of trilobite collectors, as well as increase the protection of trilobite collecting localities and associated impacts by tracking the amount of use and associated impacts. The decrease in lands open to off-highway vehicle use would reduce impacts to paleontological resources. Alternative C would meet the goal for the paleontology program.

Alternative D

Impacts from Paleontology Management Actions. Impacts to paleontological resources as a result of program-specific management activities would be the same as described for the Proposed RMP. Trilobite collecting localities would be closed, further reducing impacts to the resource.

Impacts from Other Programs.

Lands and Realty. There would be no net loss of public lands nor new land use authorizations such as rights-of-way authorizations in the decision area, which would minimize impacts to paleontological resources.

Renewable Energy. With the elimination of discretionary actions and authorizations within the planning area, there would be no wind energy development on public lands and no impacts of such activities to paleontological resources.

Travel Management and Off-highway Vehicle Use. Fewer impacts to paleontological resources would be anticipated, since no areas would be open to off-highway vehicle use and 11.0 million acres would be closed to off-highway vehicle use.

Geology and Mineral Extraction. The entire decision area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Recreation. All trilobite collecting locations would be closed, which would reduce impacts to the resource compared to the Proposed RMP.

Conclusion. Management of paleontological resources would be the same as the Proposed RMP, with the exception of trilobite collecting. Under this alternative, all trilobite collecting localities would be closed, which would provide a higher level of protection of these fossils compared to all other alternatives. The increase in lands closed to off-highway vehicle use would reduce impacts to paleontological resources. Alternative D would meet the goal for the paleontology program.

4.11 Visual Resources

Impact Issues

The primary impact issue associated with visual resources management is surface disturbing activities that are a result of management actions of other resource programs.

Assumptions for Analysis

None.

Interactions with Other Programs

The visual resources management program within the decision area potentially would be affected by actions within the resource management programs for vegetation, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, fire management, and special designations.

Goal

Manage public land actions and activities in a manner consistent with Ely Field Office visual resource management class objectives.

Objective

To implement multiple use activities within the decision area with mitigation measures consistent with the visual resource management classes.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to visual resources also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. Mitigation measures were considered within the following impact analysis section in response to anticipated impacts. Additional “proposed mitigation” for visual resources is identified in Section 4.29, Proposed Mitigation and Potential Effectiveness. In order to be carried forward as part of the Approved RMP, these “proposed mitigation measures” would have to be incorporated into the final decision documented in the Record of Decision. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis.

These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Visual Resources Management Actions. Under the Proposed RMP, visual resource management would be based on the revised visual inventory compiled for the decision area and presented on **Map 2.4.11-1**, Visual Resources Management Classes Proposed RMP and Alternative B. Acreages for the four visual resource management classes are presented in Section 2.4.11. The change in acreage from current management under the Proposed RMP is summarized in **Table 4.11-1.**

Table 4.11-1
Changes in Visual Resource Management Classification in Proposed RMP from Current Management

Visual Resource Management Class	Approximate Change in Acreage
I	- 0.31 million
II	+ 2.11 million
III	+ 4.20 million
IV	- 2.42 million
No Classification	- 3.58 million

Establishing visual resource management classes for areas that were previously unclassified, increasing the acreage of land in Class II and III, and reducing the acreage of land in Class IV, would preserve or enhance scenic values in the decision area as compared to current management.

By classifying designated utility corridors as Class IV, consistent with their potential future use, project proponents would be encouraged to locate proposed facilities within corridors. The Proposed RMP designates a Class II corridor along the Pony Express Trail. This designation would provide greater protection of scenic values along the trail than current management.

Impacts from Other Programs.

Vegetation. Under the Proposed RMP, the areas identified for potential vegetation treatments would total approximately 7.1 million acres, or 62 percent of the decision area. However, this treatment would be spread over several decades, allowing vegetation in treated areas to recover as new areas are treated. Since the use of fire would be maximized under this alternative, a noticeable change in landscape appearance would occur during the short term on treated areas. However, in the long term, the reestablishment of diverse plant life forms rather than homogenous communities of grasses, shrubs, or trees would improve scenic values. Vegetation treatment areas with linear margins, such as from mechanical treatment, would introduce unnatural visual elements into the landscape. Treating vegetation in wildland/urban interface areas might make these impacts more apparent.

Lands and Realty. Under the Proposed RMP, land and realty actions such as utility rights-of-way and communication site development potentially would impact visual resources. However, objectives for each visual resource management class identified in Section 3.11 would be managed for under the Proposed RMP. Visual resource contrast ratings would be completed as part of the evaluation of any proposed project. This analysis would result in recommended mitigation measures that would meet specific objectives for each visual resource management class in the project area. The objective to locate large linear projects within designated 0.5- to 0.75-mile-wide corridors and to co-locate communication sites would localize impacts to visual resources, but also would potentially increase visual impacts in the viewsheds where these corridors are located. The construction of smaller projects or facilities ancillary for larger projects, such as communication lines, electrical lines, pipelines, and access roads, may take place outside of designated corridors. Such projects would have lesser impacts to visual resources, which may be more effectively mitigated to achieve visual resource management objectives. Approximately 75,600 acres would be available for disposal, and development of disposed lands could lead to visual impacts in these areas. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Renewable Energy. Renewable energy development would have impacts on visual resources from the construction of wind turbines and solar collectors. Since biomass utilization would be dependent on vegetation treatment, impacts are contained in the Vegetation section above. Renewable energy projects can potentially cover a large surface area (40,000 acres), resulting in a high degree of impact to the visual setting of a project. It may not be possible to mitigate such impacts to meet the visual resource management objectives for affected areas. The impacts from rights-of-way for ancillary access roads, pipelines, and transmission lines are discussed under Lands and Realty above. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS.

Travel Management and Off-highway Vehicle Use. Under the Proposed RMP, travel management and off-highway vehicle use management actions would reduce impacts on visual resources by restricting cross-country off-highway vehicle use on approximately 10.3 million acres (90 percent) of the decision area, initially to existing roads and trails and subsequently to designated roads and trails, as determined through a public process and area-specific analysis. No areas would be classified as open. This management action would reduce impacts from surface disturbances and dust generation. Localized disturbances to visual resources could still occur from off-highway vehicle use.

Recreation. There would be a potential for recreation management to affect visual resources. Development of recreation facilities may occur, potentially causing impacts to visual resources. However, implementation of mitigation measures for developed facilities based on the visual resources management class objectives would minimize these impacts. However, mitigation measures to protect scenic values would be identified in site-specific management plans. By emphasizing these recreation activities in specific areas, impacts to visual resources in other parts of the decision area would be limited.

Livestock Grazing. Livestock grazing activities could impact visual resources. Maintenance and potential construction of fencing and water tanks would have minimal impacts on the visual resources of existing landscapes. Additionally, grazing activities within riparian areas and other vegetation communities potentially would impact visual resources through vegetation loss and soil exposure in areas of concentrated use. Livestock grazing will continue to be authorized for approximately 424,602 animal unit months on 8.4 million acres for allotments that have been determined to be meeting or progressing toward achievement of the standards for rangeland health. These will continue as needed to meet RMP goals and objectives including the standards for rangeland health. Current livestock grazing will be maintained for 120,665 animal unit months on 3.2 million acres until allotments have been evaluated for progress toward achievement of the standards for rangeland health. Changes to livestock grazing use will be made as needed to meet or progress toward achievement of the standards. These actions would lessen the impacts to the resource.

Forest/Woodland and Other Plant Products. The private and commercial use of forest/woodland and other plant products would have minimal impacts on visual resources. Plant collection activities and Christmas tree collection would have limited impacts on visual resources in and adjacent to collection areas. However, under the forest/woodland products program, all operations would be restricted to areas where resource surveys have been conducted, which would include visual resource management assessment.

Geology and Mineral Extraction. Geology and mineral extraction would impact visual resources. Authorization of surface-disturbing and surface-occupying activities related to mining, oil and gas development, and geothermal development would impact visual resources. However, these impacts would be limited to approximately 17,100 acres of reasonably foreseeable development estimated for the next 20 years (0.14 percent of the planning area). Additionally, mitigation measures would be required for mineral development based on the visual resource management class objectives, thereby reducing overall impacts to visual resources.

Fire Management. Fire management activities have the potential to substantially affect visual resources. Long-term impacts may result from surface-disturbing suppression activities, such as the use of bulldozers to construct fire lines and the driving of fire equipment cross-country. Prescribed fire and wildland fire use activities, which would be maximized under this alternative, may have short-term impacts on visual values. Long-term impacts to visual resources would vary according to spatial arrangement, vegetation mosaics created, and proximity of treatments to high-use locations such as recreation areas.

Special Designations. Special designations would have the potential to reduce impacts to visual resources through special management. Ten of the 20 proposed ACECs would be designated as partially or totally Visual Resource Management Class I areas (see Section 2.4.22). The Blue Mass Scenic Area ACEC would be designated as a Visual Resource Management Class I area, protecting its scenic qualities. Approximately 1.1 million acres of designated wilderness and 81,000 acres in wilderness study areas would be managed as Visual Resource Management Class I. Designating approximately 297,000 acres of new ACECs as right-of-way avoidance areas and 25,000 acres of new ACECs as right-of-way exclusion areas would further protect scenic values in those areas.

Conclusion. Management prescriptions under the Proposed RMP would classify approximately 1.2 million acres as Visual Resource Management Class I and 2.4 million acres as Visual Resource Management

Class II. Having classifications for all lands within the decision area would allow for a more comprehensive framework for preserving and mitigating impacts to visual resources. Maximizing the use of prescribed fire and wildland fire use would create short-term visual impacts that would diminish in the long term after treatments are completed. The Proposed RMP would meet the goal for the visual resources program.

Alternative A

Impacts from Visual Resources Management Actions. Under Alternative A, visual resource management classes would continue to use the visual inventory compiled for the Schell and Caliente Resource Areas, as presented in **Map 2.5.11-1**, Visual Resources Management Classes Alternative A. The balance of the decision area (the Egan Resource area) would remain unclassified, but visual resource management classes would be established on a project-specific level. The lack of comprehensive visual resources management for the entire decision area could reduce visual resource quality due to a lack of coordinated visual resource protection. The lack of comprehensive visual resource management also could result in legal challenges when the classifications are established at the project-specific level.

Impacts from Other Programs. Visual resource impacts associated with renewable energy, livestock grazing, forest/woodland and other plant products, and fire management activities would be similar to those described for the Proposed RMP.

Vegetation. The areas identified for potential vegetation treatments would total approximately 2.9 million acres, or 25 percent of the decision area. The impacts of these treatments to visual resources would be similar to those described for the Proposed RMP.

Lands and Realty. The impacts of land and realty actions on visual resources would be similar to those described for the Proposed RMP. Approximately 31,900 acres would be available for disposal, and development of disposed lands could lead to visual impacts in these areas.

Travel Management and Off-highway Vehicle Use. The open classification for off-highway vehicle use on 9.8 million acres (86 percent) of the decision area would result in impacts to visual resources, including route proliferation, vegetation loss, soil exposure and erosion, and dust emissions.

Recreation. There would be a potential for recreation management to affect visual resources. Existing recreation facilities would be maintained, with minimal impacts to visual resources. Localized impacts to visual resources could result in and around the race routes used for motorcycle and truck events, held under special recreation permits.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that of the Proposed RMP. However, approximately 4 million acres presently are available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Special Designations. Special designations would have minimal impact on visual resources. While the three existing Desert Tortoise ACECs would be retained, and they contain some Class I areas, no new ACECs are proposed under this alternative.

Conclusion. Management prescriptions for Class I and II areas (approximately 1.5 million acres and 284,000 acres, respectively) would continue to preserve the scenic character of these lands. Although unclassified areas in the historic Egan Resource Area totaling approximately 3.6 million acres (32 percent of the decision area) would be addressed on a project-specific basis, there potentially could be impacts by not having a comprehensive framework for addressing visual resources in place. Continued designation of areas as open to cross-country off-highway vehicle use would result in visual impacts through surface disturbances and dust emissions. Alternative A would not meet the goal for the visual resources program.

Alternative B

Impacts from Visual Resources Management Actions. Impacts from the visual resource management actions would be almost the same as those under the Proposed RMP. The change in acreage from current management under Alternative B is summarized in **Table 4.11-2**.

Table 4.11-2
Changes in Visual Resource Management Classification in Alternative B from Current Management

Visual Resource Management Class	Approximate Change in Acreage
I	- 0.31 million
II	+ 1.98 million
III	+ 4.25 million
IV	- 2.34 million
No Classification	- 3.58 million

Impacts from Other Programs. Visual resource impacts associated with vegetation, renewable energy, travel management and off-highway vehicle use, forest/woodland and other plant products, geology and mineral extraction, fire management, and special designations would be the same as described for the Proposed RMP.

Lands and Realty. The impacts of land and realty actions on visual resources would be similar to those described for the Proposed RMP. Approximately 90,600 acres would be available for disposal, and development of disposed lands could lead to visual impacts in these areas.

Recreation. There would be a potential for recreation management to affect visual resources. Development of recreation facilities may occur, potentially causing impacts to visual resources. However, implementation of mitigation measures for developed facilities based on the visual resources management class objectives would minimize these impacts. Localized impacts to visual resources could result in and around the 844,000 acres of special recreation management areas that have off-highway vehicle recreational values, the 656,000 acres of special recreation permit areas for motorcycle events, and truck event routes. However, mitigation measures to protect scenic values would be identified in site-specific management plans. By emphasizing these recreation activities in specific areas, impacts to visual resources in other parts of the decision area would be limited.

Livestock Grazing. Livestock grazing would be unavailable on approximately 3.8 million acres. Grazing closure over this area could potentially lead to changes in the visual character of the area associated with vegetation cover and productivity.

Conclusion. Management prescriptions under Alternative B would classify approximately 1.2 million acres as Visual Resource Management Class I and 2.4 million acres as Visual Resource Management Class II. Having classifications for all lands within the decision area would allow for a more comprehensive framework for preserving and mitigating impacts to visual resources. Maximizing the use of prescribed fire would create short-term visual impacts that would diminish in the long term after treatments are completed. Alternative B would meet the goal for the visual resources program.

Alternative C

Impacts from Visual Resources Management Actions. Visual resource management would be based on the revised visual inventory compiled for the decision area and presented on **Map 2.7.11-1**, Visual Resources Management Classes Alternative C. Acreages for the four visual resource management classes are presented in Section 2.7.11. The change in acreage from current management under Alternative C is summarized in **Table 4.11-3.**

Table 4.11-3
Changes in Visual Resource Management Classification in Alternative C from Current Management

Visual Resource Management Class	Approximate Change in Acreage
I	- 0.31 million
II	+ 2.14 million
III	+ 4.34 million
IV	- 2.59 million
No Classification	- 3.58 million

By establishing visual resource management classes for areas that were previously unclassified, increasing the acreage of land in Class II and III, and reducing the acreage of land in Class IV, scenic values in the decision area would be preserved or enhanced compared to current management. The decrease of 310,700 acres (approximately 9 percent) of land in Class I could result in noticeable impacts. Other impacts from the visual resource management actions would be the same as those under the Proposed RMP.

Impacts from Other Programs. Visual resource impacts associated with renewable energy, livestock grazing, geology and mineral extraction, and special designations would be similar to those described for the Proposed RMP.

Vegetation. The areas affected by vegetation treatments would total approximately 7.5 million acres, or 68 percent of the decision area. The impacts of these treatments to visual resources would be similar to those described for the Proposed RMP.

Lands and Realty. The impacts of land and realty actions on visual resources would be similar to those described for the Proposed RMP. However, this alternative would designate utility corridors that are three miles wide, and it would not emphasize the co-location of communication sites. These management actions would lead to greater localized impacts to visual resources, and also would spread the visual impacts in a wider area across the viewsheds where the designated corridors are located. Approximately 295,200 acres would be available for disposal, and development of disposed lands could lead to visual impacts in these areas.

Travel Management and Off-highway Vehicle Use. Management action would designate 32,000 acres of dry lake beds as open to cross-country off-highway use, which could result in surface disturbances and dust generation impacts.

Recreation. There would be a potential for recreation management to affect visual resources. Development of recreation facilities may occur, potentially causing impacts to visual resources. However, implementation of mitigation measures for developed facilities based on the visual resources management class objectives would minimize these impacts. Localized impacts to visual resources could result in and around the 730,000 acres of Special Recreation Management Areas that have off-highway vehicle recreational values the 1.3 million acres of special recreation permit areas for motorcycle events, and truck event routes. However, mitigation measures to protect scenic values would be identified in site-specific management plans. By emphasizing these recreation activities in specific areas, impacts to visual resources in other parts of the decision area would be limited.

Forest/Woodland and Other Plant Products. Increased gathering of forest/woodland and other plant products would impact visual resources in both the short and long term.

Fire Management. Wildland fires would be suppressed, reducing impacts to visual resources in the short term. However, long-term impacts caused by wildland fires could result as fires become larger and more difficult to suppress due to increased fuel accumulation. Surface disturbing suppression activities such as the use of bulldozers to construct fire line and the driving of fire equipment cross-country would be greater for larger fires, and since the fires would be expected to be hotter, restoration of burned areas would take longer.

Conclusion. Management prescriptions under Alternative C would classify approximately 1.2 million acres as Visual Resource Management Class I and 2.4 million acres as Visual Resource Management Class II. Having classifications for all lands within the decision area would allow for a more comprehensive framework for preserving and mitigating impacts to visual resources. Utility corridor widths of 3 miles would create greater impacts in localized areas. Suppression of wildland fires would reduce impacts from fire in the short term until wildland fires became impossible to suppress, which could lead to greater long-term impacts. Alternative C would meet the goal for the visual resources program.

Alternative D

Impacts from Visual Resources Management Actions. The entire decision area would be designated as either Visual Resources Management Class I or Class II, which would protect scenic resources. Class I areas would be limited to designated wilderness. The remainder of the decision area would be designated as Class II (**Map 2.8.11-1**). Acreages for the visual resource management classes under this alternative are presented in **Table 2.9-1**. By designating the entire decision area as Class I or II, substantially greater mitigation would be required for projects to meet visual resource management goals.

Impacts from Other Programs.

Vegetation. The areas identified for potential vegetation treatments would total approximately 3.6 million acres, or 32 percent of the decision area. The impacts of these treatments to visual resources would be similar to those described for the Proposed RMP.

Lands and Realty. There would be no new land use authorizations, which would greatly limit impacts to visual resources. There would be no net loss of public land in the decision area, but where disposals did occur, there would be the potential for impacts to visual resources. Approximately 12,400 acres would be available for disposal, and development of disposed lands could lead to visual impacts in these areas.

Renewable Energy. Renewable energy development would have no impacts on visual resources, because no new land use authorizations would be issued, nor would new utility corridors be designated.

Travel Management and Off-highway Vehicle Use. Eleven million acres (96 percent) of the decision area would be closed to off-highway use, which would eliminate all impacts to visual resources in closed areas. No areas would be classified as open. Localized disturbances to visual resources could still occur from off-highway vehicle use on maintained roads and trails.

Recreation. No Special Recreation Management Areas or Special Recreation Permit areas or routes would be designated. Thus, no visual resource impacts would occur from emphasized recreation activities.

Livestock Grazing. Livestock grazing activities would be virtually eliminated and, thus. would have minimal impact on visual resources.

Forest/Woodland and Other Plant Products. The elimination of the gathering of forest/woodland and other plant products would reduce impacts on visual resources.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Fire Management. Wildland fires would not be suppressed, potentially increasing impacts to visual resources in the short term, and resulting in long-term impacts as catastrophic fires cause large areas to be denuded.

Special Designations. All special designations except designated wilderness and wilderness study areas would be dropped, but all special designation areas would be managed as Class I. This would result in less protection to visual resources in existing scenic areas.

Conclusion. Management prescriptions under Alternative D would increase the amount of land in Visual Resource Management Class II to approximately 10.3 million acres (90 percent of the decision area). By identifying all areas (11.5 million acres) as either Class I or II, substantial restrictions would be placed on activities that could be allowed under other resource management activities or increase the potential mitigation measures that would be required. The fact that there would be no new land use authorizations, such as rights-of-way, also would reduce impacts in the short and long term. A policy of minimal fire suppression would create short-term visual impacts that would increase over the long term as more catastrophic fires occur. Alternative D would meet the goal for the visual resources program.

4.12 Lands and Realty

Impact Issues

The demand for uses of BLM-administered land within the planning area has grown over the past decade and is expected to continue to grow over the life of the Approved RMP. The challenge for the Ely Field Office would be to accommodate lands and realty needs for community development, rights-of-way, easements, leases, and other permitted uses while minimizing adverse effects on, or conflicts with, other resources.

Assumptions for Analysis

- Land disposals primarily would be limited to lands identified for possible disposal. Requests for possible disposals can be made for any BLM-administered land and would be evaluated on a case-by-case basis.
- Identification of lands for possible disposal does not dictate that these lands would be sold or otherwise disposed.

Interactions with Other Programs

The lands and realty management program within the planning area potentially would be affected by actions within the resource management programs for fish and wildlife, special status species, wild horses, cultural resources, visual resources, recreation, geology and mineral extraction, and special designations.

Goal

Manage public lands in a manner that:

- Allows the retention of public land with high resource values;
- Consolidates public land patterns to ensure effective administration and improve resource management;
- Makes public lands that promote community development available for disposal;
- Meets public, local, state, and federal agency needs for use authorizations such as rights-of-way, permits, leases, and easements while avoiding or minimizing adverse impacts to other resource values; and
- Utilizes withdrawal actions with the least restrictive measures and minimum size necessary to accomplish the desired purpose.

Objective

To respond to public, local, state, and federal agency needs for land for community development, utility and other associated rights-of-way, communication sites, and other allowed uses of BLM-administered lands.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Mitigation measures also were considered within the following impact analysis section in response to anticipated impacts. Additional "proposed mitigation" for lands and realty is identified in Section 4.29, Proposed Mitigation and Potential Effectiveness. In order to be carried forward as part of the Approved RMP, these "proposed mitigation measures" would have to be incorporated into the final decision documented in the Record of Decision. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Lands and Realty Management Actions.

Parameter – Retention

Under the Proposed RMP, more lands are identified for retention. Having a more clear definition of lands to retain in order to preserve federally listed threatened and endangered species, fisheries, culturally significant lands, and lands of high recreational value serves to allow better resource management in these areas. The elimination of mandatory retention of big and upland game habitat, and wild horse herd management areas would allow more flexibility in management actions while still preserving lands that contribute to the restoration and health of the land.

Parameter – Disposal (Sales, Exchanges, Recreation and Public Purposes Act, and Airport Conveyances)

Under the Proposed RMP, approximately 110,000 acres would be identified for potential disposal, including approximately 75,600 acres identified for disposal by competitive sales. The remainder would be allocated for direct sales or transfers to other governmental entities. These areas would be withdrawn from mineral entry. Having these areas identified or withdrawn facilitates the disposal of land for promoting community development as compared to current management. Withdrawals for resource protection, watershed health, and administration would help to protect watersheds and consolidate land management. Limitations on disposals in designated critical habitat for threatened and endangered species would allow better resource management in these sensitive areas.

Military Operations Areas. The disposal and possible development of land located under Military Operations Areas has the potential to impact military air operations. Development of any land located under the Military Operations Areas would increase the vulnerability of the Department of Defense to complaints concerning the military operations overhead. These complaints could potentially limit, alter, or cease military operations in those areas, adversely affecting the training and readiness of U.S. military combat forces. There also would be an increased safety risk associated with the development of land under the Military Operations Areas. Mishaps such as aircraft crashes, emergency/accidental jettisoning of external fuel tanks, collisions, etc., are risks present in those areas located under Military Operations Areas. In the event of a mishap, developments under Military Operations Areas could be jeopardized. Mitigation measures designed to protect Military Operations Areas and the vital training they provide are discussed in Section 4.29, Proposed Mitigation and Potential Effectiveness.

Parameter – Acquisitions

Under the Proposed RMP, acquisitions would be limited to situations where no other reasonable alternative exists, managing newly acquired lands in a manner comparable to surrounding public lands (or in conformance with established policies for special management areas), and conducting noxious weed assessments prior to acquisitions would allow adequately effective administration and resource management while minimizing expenditures.

Parameter – Withdrawals

Under the Proposed RMP, all lands identified as being available for potential disposal would be withdrawn from mineral entry. This would eliminate some potential conflicts regarding mineral entry on lands identified for potential disposal that could arise under current management, where only 11,525 acres of lands identified for potential disposal would be recommended for withdrawal from mineral entry.

Parameter – Corridors

Under the Proposed RMP, most corridors would be designated as 0.5 mile wide, with the Southwest Intertie Project Corridor being 0.75 mile wide throughout most of its length, and a utility corridor in the southeastern portion of the planning area being retained as 1,000 feet wide. The additional width of the Southwest Intertie Project Corridor would allow for more rights-of-way to be granted in the major north-south corridor through the planning area.

Parameter – Communication Sites

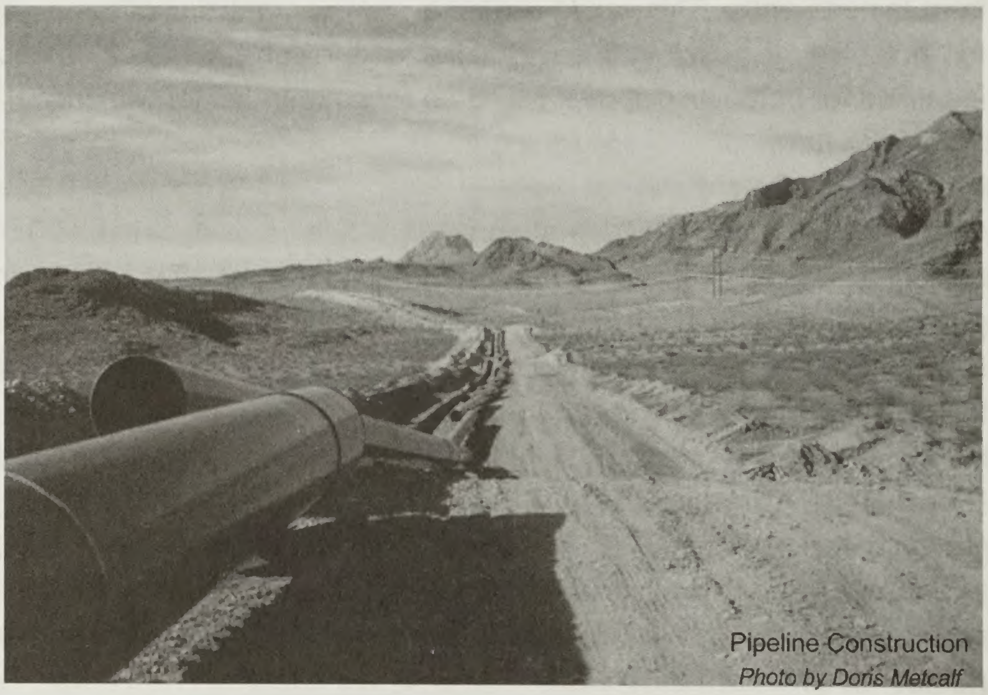
Under the Proposed RMP, communication site locations would be authorized with an emphasis in co-location of sites. This allows for a more proactive approach to communication site development, which could reduce the impacts associated with the proliferation of communication sites through reducing the total number of communication sites.

Parameter – Land Use Authorizations (Rights-of-way, Permits, Leases, Easements, and Unauthorized Use)
Establishing more avoidance and exclusion areas for special designation areas, and consolidating new land use authorizations within or adjacent to existing authorizations would reduce the impacts associated with those land use authorizations.

Impacts from Other Programs.

Fish and Wildlife. Seasonal restrictions to protect wildlife during crucial seasons of use and periods of their lives may cause right-of-way applicants to modify their projects which could increase the cost of the project. Requiring right-of-way applicants to improve 2 acres of priority wildlife habitat for every 1 acre disturbed would increase the cost of the project or cause the applicant to change the location of the project. This applies to crucial summer range, winter range, calving/fawning/kidding/lambing grounds, and occupied desert bighorn sheep habitat which total about 3.1 million acres (without adjustment for overlapping categories, or 27 percent of the planning area.

Special Status Species. The presence of a special status species may increase the cost of a project because of surveys that may be needed or mitigating measures that may be required to reduce the impacts to that species. Seasonal restrictions to protect raptor nesting, greater sage-grouse breeding and nesting, and greater sage-grouse on winter range may cause right-of-way applicants to modify their projects which could increase the cost of the project. Requiring right-of-way applicants to improve 2 acres of special status species habitat for every 1 acre disturbed would increase the cost of the project or cause the applicant to change the location of the project. This would apply to all sensitive species habitat, including greater sage-grouse habitat but not desert tortoise habitat, Special status species habitats for which map data are available make up about 38 percent of the planning area with desert tortoise and greater sage-grouse habitats being the primary contributors.


Pipeline Construction
Photo by Doris Metcalf

Seasonal restrictions to protect desert tortoises during their most active period, other management actions to protect desert tortoises and their habitat, and the payment of a remuneration fee based on acres of habitat disturbed, would increase the cost of a project. There are about 726,000 acres of desert tortoise habitat, or about 7 percent of the planning area.

Wild Horses. Management of wild horses would not typically affect land disposals. The reduction of acreage of herd management areas from 5.4 million acres to approximately 3.7 million acres would potentially reduce conflicts with the lands available for disposal for community development.

Cultural Resources. Lands containing cultural resource sites eligible for the National Register of Historic Places would not be available for possible disposal unless mitigation measures were enacted or if these land exchanges serve the national interest and are beneficial to the Ely Field Office programs or support the programs of other agencies. This could potentially reduce the land available for possible disposal for community development, but would maintain or enhance the protection of resources.

Visual Resources. Visual resource management under the Proposed RMP would affect various land use authorizations. Facilities would strive to meet the objectives of the particular visual resource management class in which a project was proposed. The increase in Classes II and III under the Proposed RMP could result in more mitigation measures to preserve scenic qualities for site-specific projects than under current management. The fact that all utility corridors would be designated Visual Resource Management Class IV would reduce mitigation requirements for developments within those corridors.

Recreation. The retention of lands of high recreational value would reduce the amount of land available for potential disposal.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (see Section 4.18), would be distributed throughout the 11.5 million acres of the planning area. Mineral exploration and development could preclude land disposals and withdrawals. Mining claims could result in validity exams and increased costs to land disposals and withdrawals.

Special Designations. Approximately 1.4 million acres of special designation areas (including designated wilderness, wilderness study areas, and ACECs) (detailed in Section 2.4.22) would be land use authorization limited/avoidance (135,760 acres), avoidance with exception for existing rights (15,600 acres), avoidance (97,350 acres), or exclusion (1,154,740 acres) areas under this alternative. This would create greater limitations on land uses, such as rights-of-way and communication sites in these areas. This acreage is approximately 13 percent of the total decision area.

Conclusion. Approximately 75,600 acres would be available for possible disposal by competitive sales and would be withdrawn from mineral entry. Having these areas identified would facilitate the disposal of BLM-administered lands for community development. Designated critical habitat for federally listed threatened and endangered species, cultural resources, mineral exploration and development, watershed restoration, and special designation areas could preclude the disposal of certain parcels and land use authorizations. The Proposed RMP would allow a higher degree of flexibility in land use authorizations by identifying the new 0.5-mile-wide Spring Valley corridor. Encouraging co-location of land use authorizations would reduce or localize impacts to other resources. Approximately 1.4 million acres would be identified as avoidance or exclusion areas. The Proposed RMP would meet the goals for the lands and realty program.

Alternative A

Impacts from Lands and Realty Management Actions.

Parameter – Retention

Big and upland game habitat and wild horse herd management areas would be retained, reducing flexibility in management actions as compared to the Proposed RMP. Other lands, such as areas with high recreation value or having fisheries would not be identified for retention, potentially leading to the degradation of these resources.

Parameter – Disposal

Approximately 44,000 fewer acres would be identified for disposal by competitive sales, less than one-half the amount in the Proposed RMP. Having fewer areas identified for potential disposal could make the disposal of land for promoting community development more difficult and time-consuming compared to the Proposed RMP.

Parameter – Acquisitions

Impacts from acquisitions would be the same as those for the Proposed RMP.

Parameter – Withdrawal

Approximately 265,000 fewer acres would be withdrawn from mineral entry than under the Proposed RMP (see Section 4.18). Having fewer areas withdrawn could lead to potential conflicts if these areas have mineral entry allowed prior to any application to dispose of them.

Parameter – Corridors

There would be slightly less space available for right-of-way authorizations along the Southwest Intertie Project corridor, and no Spring Valley corridor would be designated. This could make right-of-way authorizations in these areas more difficult and time consuming.

Parameter – Communication Sites

The authorization of communication sites on a case-by-case basis could lead to a proliferation of sites and inefficient siting of communication facilities as compared to the Proposed RMP, which would encourage co-location of sites and identify specially designated areas as avoidance or exclusion areas.

Parameter – Land Use Authorizations (Rights-of-way, Permits, Leases, Easements, and Unauthorized Use)

Land use authorizations would be issued on a case-by-case basis. There would be fewer areas identified as avoidance and exclusion areas, and less emphasis on reclamation and resolution of unauthorized uses, as compared to the Proposed RMP. This could result in less effective resource management than the Proposed RMP.

Impacts from Other Programs.

Fish and Wildlife. The retention of big and upland game habitat would prohibit disposal of certain areas and affect selection of areas available for potential disposal.

Special Status Species. The retention of lands to prevent adverse effects on threatened or endangered species or their habitat would prohibit disposal of certain areas and affect selection of areas available for potential disposal.

Wild Horses. The retention of lands in wild horse herd management areas would prohibit disposal of certain areas and affect selection of areas available for potential disposal.

Cultural Resources. Lands containing cultural resource sites eligible for the National Register of Historic Places would not be available for possible disposal unless mitigation measures were enacted or if these lands were exchanged for lands of equal or greater resource value. This could potentially reduce the land available for possible disposal.

Visual Resources. Since only 1.7 million acres would be classified as Visual Resource Management Class I or II, visual management objectives would have only a limited effect on the location of rights-of-way and communication sites within the decision area.

Recreation. Recreation management actions would have minimal effects on the lands and realty program under current management.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that of the Proposed RMP. However, approximately 4 million acres presently are available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP. The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Special Designations. Existing land use authorization avoidance and exclusion areas identified in Section 2.5.22 would continue to be implemented. This would result in fewer acres being identified as avoidance or exclusion areas (approximately 1.3 million acres) as compared to the Proposed RMP and would have a lesser impact on lands and realty actions.

Conclusion. Under Alternative A, approximately 31,900 acres would be identified for disposal by competitive sales. Having fewer areas identified for potential disposal or withdrawn could make the disposal of land for promoting community development more difficult and time-consuming compared to the Proposed RMP. By not identifying new communication sites or 0.5-mile-wide corridors, the location of future rights-of-way and communication sites would not be addressed proactively and could take longer to occur by being addressed on a case-by-case basis under site-specific NEPA analyses. Alternative A would not meet the goals for the lands and realty program.

Alternative B

Impacts from Lands and Realty Management Actions.

Parameter – Retention
Retentions would be managed in the same way as under the Proposed RMP, with the same impacts.

Parameter – Disposal
Approximately 90,600 acres would be identified for disposal by competitive sales. Impacts would be the same as discussed for the Proposed RMP.

Parameter – Acquisitions
Acquisitions would be managed in the same way as under the Proposed RMP, with the same impacts.

Parameter – Withdrawal
Approximately 209,600 fewer additional acres would be withdrawn from mineral entry as compared to the Proposed RMP.

Parameter – Corridors
Several corridors would be 1 mile wide, as opposed to the 0.5-mile-wide corridors under the Proposed RMP. This would allow more area for right-of-way authorizations within these corridors, though it could lead to greater impacts to other resources.

Parameter – Communication Sites
No new communication sites would be authorized until existing sites had reached maximum capacity. This would reduce the proliferation of communication sites, but also would reduce the ability to establish new sites for community and economic development, as compared to the Proposed RMP.

Parameter – Land Use Authorizations (Rights-of-way, Permits, Leases, Easements, and Unauthorized Use)
Land use authorizations would be managed in the same way as under the Proposed RMP, with the same impacts.

Impacts from Other Programs. Lands and realty impacts associated with vegetation, fish and wildlife, special status species, wild horses, cultural resources, visual resources, renewable energy, recreation, livestock grazing, geology and mineral extraction, watershed management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Special Designations. Approximately 1.4 million acres of special designation areas (detailed in Section 2.6.22) would be land use authorization avoidance or exclusion areas under this alternative. This would create greater limitations on land use in these areas as compared to the Proposed RMP.

Conclusion. Under Alternative B, there would be 90,600 acres identified for disposal by competitive sales and withdrawn from mineral entry. More area would be available for siting rights-of-way within utility corridors because several corridors would be twice as wide as they would be under the Proposed RMP. This would allow greater flexibility in conducting lands and realty activities. Limitations on siting new communication sites until existing capacity was exceeded would limit the ability to develop new sites to promote community development. Alternative B would meet the goals of the lands and realty program.

Alternative C

Impacts from Lands and Realty Management Actions.

Parameter – Retention
Retentions would be managed in the same way as under the Proposed RMP, with the same impacts.

Parameter – Disposals
Approximately 295,200 additional acres would be identified for disposal by competitive sales while the total amount of land disposed of over the life of the RMP would not change, more flexibility in the disposal of lands would be achieved.

Parameter – Acquisitions
Acquisitions would be managed in the same way as under the Proposed RMP, with the same impacts.

Parameter – Withdrawal
Approximately 11,300 fewer acres would be withdrawn from mineral entry as compared to the Proposed RMP.

Parameter – Corridors
Several corridors would be 3 miles wide, as opposed to the 0.5-mile-wide corridors under the Proposed RMP. This would allow more area for right-of-way authorizations within these corridors, though it could lead to greater impacts to other resources.

Parameter – Communication Sites
Communication site locations that would facilitate community and economic development would be authorized. This, along with the lack of emphasis on co-location, could lead to a greater proliferation of communication sites that could be less efficient than the Proposed RMP.

Parameter – Land Use Authorizations (Rights-of-way, Permits, Leases, Easements, and Unauthorized Use)

Land use authorizations would be processed to facilitate community and economic development. This could lead to a greater number of land use authorizations, though it could lead to a degradation of other resources.

Impacts from Other Programs.

Lands and realty impacts associated with vegetation, fish and wildlife, special status species, wild horses, cultural resources, visual resources, renewable energy, recreation, livestock grazing, geology and mineral extraction, watershed management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Special Designations. Approximately 1.4 million acres of special designation areas (detailed in Section 2.7.22) would be land use authorization avoidance or exclusion areas under this alternative. This would create greater limitations on land use in these areas as compared to the Proposed RMP.

Conclusion. Under Alternative C, there would be 295,200 acres identified for disposal by competitive sales and withdrawn from mineral entry. More area would be available for siting rights-of-way within utility corridors because several corridors would be six times as wide as they would be under the Proposed RMP. This would allow greater flexibility in conducting these lands and realty activities. Lack of emphasis on co-location of siting new communication sites may lead to a greater proliferation of these sites as compared to the Proposed RMP. Alternative C would meet the goals of the lands and realty program.

Alternative D

Impacts from Lands and Realty Management Actions.

Parameter – Retention

There would be no net loss of public lands in the planning area. The lack of criteria for which lands would be retained as compared to the Proposed RMP would make this alternative less effective for resource management.

Parameter – Disposals

No net loss, by acreage, of public land within the planning area would occur, greatly constraining the ability to resolve known unauthorized use of public lands and conduct other lands and realty actions. Alternative D does not identify additional lands for possible disposal that would meet the objectives of the lands and realty program, benefit communities, or the Lincoln County and White Pine County Conservation, Recreation, and Development Acts.

Parameter – Acquisitions

Impacts from acquisitions would be the same as that under the Proposed RMP, with the same impacts.

Parameter – Withdrawals
Impacts from withdrawals would be the same as those under Alternative A.

Parameter – Corridors
Impacts from corridor designations would be the same as that under Alternative A because no new corridors would be designated.

Parameter – Communication Sites
All existing and pending communications sites would be analyzed, potentially increasing the efficiency of the use of these communication sites, but also may potentially reduce the ability to designate new sites for community and economic development in a timely manner, as compared to the Proposed RMP. The possible elimination of existing communication sites would further reduce the ability to address future needs.

Parameter – Land Use Authorizations (Rights-of-way, Permits, Leases, Easements, and Unauthorized Use)
The absence of new land use authorizations would greatly restrict lands actions such as designating rights-of-way.

Impacts from Other Programs. Lands and realty impacts associated with vegetation, special status species, wild horses, cultural resources, renewable energy, watershed management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Fish and Wildlife. Migratory bird corridors would be identified and these areas closed to any communication or energy tower siting, although siting these facilities would already be precluded by the management direction under lands and realty.

Visual Resources. Visual resource management class objectives would not affect the location of rights-of-way and communication sites as siting these kinds of facilities, although siting these facilities would already be precluded by the management actions under lands and realty.

Recreation. The special recreation management areas and all developed recreation sites would be eliminated, creating more acreage for possible disposal as compared to the Proposed RMP. This acreage would still be subject to the no net loss of public land criteria for this alternative.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario. Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Special Designations. There would be no net loss of public lands under this alternative. All special designations except designated wilderness and wilderness study areas would be eliminated as unnecessary. Since no new land use authorizations would be granted, special designations would have no impacts on lands and realty.

Conclusion. Approximately 12,400 acres would be identified for possible disposal. Because there would be no net loss of BLM-administered public land, conducting disposals would be much more difficult and time-consuming, as replacement lands would need to be acquired concurrently or prior to disposal. This would limit the ability of the Ely Field Office to dispose of land for community and economic development, or for other purposes. Because requests for new withdrawals, withdrawal relinquishments, or modifications would be processed on a case-by-case basis, there would not be a proactive effort toward identifying areas of sensitive or high resource values for withdrawal from entry. Limitations on new land use authorizations, and the closure of sites within migratory bird corridors and visually sensitive sites would greatly restrict lands and realty actions in Alternative D. The possible elimination of existing communication sites would further reduce the ability of the lands and realty program to address future needs. Alternative D would not meet the goals of the lands and realty program.

4.13 Renewable Energy

Impact Issues

The primary impact issues associated with renewable energy development are directly related to the large surface area needed for wind, solar, and biomass facilities and infrastructure (geothermal energy is addressed in Section 4.18). Areas that are suitable for renewable energy development are limited to those areas where these resources occur. Thus, conflicts with other resources would have the potential to reduce areas deemed suitable for development. Authorization of renewable energy projects would be evaluated using an interdisciplinary approach, and site-specific NEPA analysis would occur for all renewable energy development projects.

Assumptions for Analysis

- Identification of areas as having high potential for renewable energy does not mean these lands would be developed. The feasibility of development would be determined by project proponents, and all applications for land use authorizations would be subject to site-specific NEPA analysis.

- A reasonably foreseeable development scenario has been assumed for wind energy development based on the current interest in this type of renewable energy development within the planning area. Several projects that may total 5,000 megawatts of electricity output capacity and 40,000 acres of rights-of-way granted by the Ely Field Office are assumed. It also is assumed that 10 percent of the right-of-way area (4,000 acres) would be disturbed for facility construction and operation. (Also see Section 4.28 on cumulative impacts.) Solar and biomass energy developments are more speculative and may not occur during the life of the RMP. No surface disturbance has been assumed for these potential projects.

Interactions with Other Programs

The renewable energy program potentially would be affected by management actions within the resource programs for vegetation, fish and wildlife, special status species, wild horses, cultural resources, visual resources, lands and realty, recreation, livestock grazing, geology and mineral extraction, and special designations.

Goal

Provide opportunities for development of renewable energy sources such as wind, solar, biomass, and other alternative energy sources while minimizing adverse impacts to other resources such as wildlife and visual resources.

Objective

To be responsive to applications for renewable energy sites and associated rights-of-way, as encouraged by current BLM policy.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Renewable Energy Management Actions. Approximately 273,000 acres of moderate to high potential wind development area and 7.2 million acres of potential solar development area are identified within the Ely RMP decision area, although potential development would not be restricted to those areas. Biomass development would be based on the acreage of restoration needed to restore healthy vegetation communities, and biomass harvesting would not take place independently of vegetation treatment. While not authorized in the RMP, an estimated 4,000 acres could be disturbed by renewable energy development within approximately 40,000 acres of rights-of-way. The primary impact of the Proposed RMP would be to identify the development of these renewable energy resources as allowable within the Ely RMP decision area with the exception of avoidance and exclusion areas (e.g., wilderness study areas, designated wilderness, Visual Resource Management Class I areas, and ACECs). There would be no change in how applications for renewable energy development projects are processed.

Impacts from Other Programs.

Vegetation. Approximately 2.8 million acres of pinyon-juniper woodland would be subject to vegetation treatments under the Proposed RMP. These treatments are expected to involve thinning or removal of trees, thus potentially generating substantial quantities of biomass for energy conversion or other uses.

Fish and Wildlife. Wind energy projects would be required to comply with best management practices outlined in the Appendix F, Section 3. Implementation of these best management practices for a specific project could affect either or both facility location and design to minimize impacts to various wildlife resources. Disturbances within priority wildlife habitats would require improvement of 2 acres of priority habitat for each acre disturbed resulting in additional project costs.

Special Status Species. Renewable energy project would be required to implement measures to minimize effects to special status species. Wind energy projects would be required to comply with best management practices outlined in Appendix F, Section 3. Renewable energy projects would be required to implement measures to reduce raptor collision potential on wind turbines and electrocution potential on electrical lines, potentially adding costs to the development of renewable energy projects. Implementation of these best management practices for a specific project could affect either or both facility location and design to minimize impacts to various special status species. Disturbances within habitats for special status species other than desert tortoise would require improvement of 2 acres of priority habitat for each acre disturbed, resulting in additional project costs. Projects located within desert tortoise habitat would be subject to seasonal restrictions to avoid primary periods of tortoise activity and the payment of a remuneration fee based on the acreage of habitat disturbed.

Wild Horses, Cultural Resources, Visual Resources, Recreation, Livestock Grazing, and Geology and Mineral Extraction. Interactions of renewable energy projects with other resource programs would be evaluated on a case-by-case basis to determine if proposed land use authorizations for such projects would be appropriate. The presence of special status species, wild horses, archaeological or historical resources, visual resource management objectives, recreation resources, livestock range development (e.g., wells and springs), mineral leases or claims could affect the location, design, and implementation of proposed renewable energy projects. It is anticipated that project-specific mitigation measures would be required for site-specific resource conflicts. In the extreme case, conflicts with these resources could preclude the issuing of a land use authorization for a specific project.

Lands and Realty. Renewable energy projects, such as wind farms and concentrated solar power development, could be impacted by land use authorizations for power plants, disposals of land resulting in commercial or residential developments, and other lands and realty actions resulting in siting constraints for these large facilities. Approximately 75,600 acres are identified for possible disposal, which is a small area relative to the 7.2 million acres of high potential for solar energy within the planning area. While the acreage of moderate to high potential for wind energy (approximately 273,000 acres) is considerably less, these areas typically occur along ridge tops. These areas are not types of lands proposed for disposal.

Special Designations. The designation of 20 ACECs (3 existing plus 17 new) would create right-of-way exclusion and avoidance areas that could limit the siting of renewable energy development projects and the transmission lines required to connect them to the transmission grid. Due to the generally small size and dispersed locations of the proposed ACECs, the impact is expected to be small. The three desert tortoise ACECs located in the Mojave Desert region of the planning area (see Section 2.4.22) and areas designated as wilderness also would affect the location of solar energy projects. New roads would not be constructed in desert tortoise ACECs and designated wilderness, reducing impacts to resources protected by these designations. Approximately 74,500 acres of moderate to high wind potential and 513,700 acres of high solar potential occur within ACECs, designated wilderness, and wilderness study areas.

Conclusion. The primary impact of the Proposed RMP would be to facilitate the development of renewable energy resources. Surface disturbance for an assumed wind energy development scenario could total 4,000 acres, about 0.03 percent of the decision area. Wind and solar power developments would have to be compatible with the management prescriptions for other resources and would be evaluated on a project-specific basis. Biomass development would be based on the acreage of vegetation treatment needed to restore healthy vegetation communities. The Proposed RMP would meet the goal for the renewable energy program.

Alternative A

Impacts from Renewable Energy Management Actions. Renewable energy development would continue to be authorized on a case-by-case basis. The lack of identification of areas of resource conflict as avoidance and exclusion areas would not facilitate the planning of potential development of renewable energy resources by project proponents. The number of potential projects would be the same as the Proposed RMP. There would be no change in how applications for renewable energy development projects are processed.

Impacts from Other Programs. Effects on renewable energy development associated with management actions for fish and wildlife, special status species, wild horses, cultural resources, visual resources, recreation, livestock grazing, and geology and mineral extraction would be the same as described for the Proposed RMP.

Vegetation. Approximately 1.1 million acres of pinyon-juniper woodland would be subject to vegetation treatments under Alternative A. These treatments are expected to involve thinning or removal of trees, thus potentially generating substantial quantities of biomass for energy conversion or other uses.

Lands and Realty. Renewable energy projects, such as wind farms and concentrated solar power development, could be impacted by land use authorizations for power plants, disposals of land resulting in commercial or residential developments, and other lands and realty actions resulting in siting constraints for these large facilities. Approximately 31,900 acres are identified for possible disposal, which is a small percentage of the lands with high potential for renewable energy. By not designating any new utility corridors under Alternative A, the current management would limit the consolidation of new transmission lines into corridors.

Special Designations. No new ACECs would be designated, so there would be fewer right-of-way avoidance and exclusion areas that could influence the siting of renewable energy development projects and transmission lines, as compared with the Proposed RMP. However, the three desert tortoise ACECs and three wilderness study areas would be retained, and wilderness has been designated by Congress. ACECs, wilderness study areas, and designated wilderness would affect 65,000 acres with wind energy potential and 451,000 acres with solar energy potential. New roads would not be constructed in desert tortoise ACECs and designated wilderness, reducing impacts to resources protected by these designations.

Conclusion. The current management actions under Alternative A are not specific for the development of renewable energy projects, which could slightly reduce the likelihood of developing such projects. Alternative A would meet the goal for the renewable energy program.

Alternative B

Impacts from Renewable Energy Management Actions. The management actions under Alternative B would be the same as the Proposed RMP. Thus, impacts would be the same. The primary impact of management actions under Alternative B would be to facilitate the development of renewable energy resources. There would be no change in how applications for renewable energy development projects are processed.

Impacts from Other Programs. Effects on renewable energy development associated with management actions for vegetation, fish and wildlife, special status species, wild horses, cultural resources, visual resources, recreation, livestock grazing, and geology and mineral extraction would be the same as described for the Proposed RMP.

Lands and Realty. Renewable energy projects, such as wind farms and concentrated solar power development, could be impacted by land use authorizations for power plants, disposals of land resulting in commercial or residential developments, and other lands and realty actions resulting in siting constraints for these large facilities. Approximately 90,600 acres are identified for possible disposal, which is a small percentage of the lands with high potential for renewable energy.

Special Designations. The designation of 18 ACECs (3 existing plus 15 new) would create right-of-way exclusion and avoidance areas that could limit the siting of renewable energy development projects and the transmission lines required to connect them to the transmission grid. Due to the generally small size, topographic features, and dispersed locations of the proposed ACECs, the impact is expected to be small. The three desert tortoise ACECs located in the Mojave Desert region of the decision area (see Section 2.6.22) would affect the location of solar energy projects. ACECs, wilderness study areas, and designated wilderness would affect 77,000 acres with wind energy potential and 490,800 acres with solar energy potential.

Conclusion. The primary impact of Alternative B would be to facilitate the development of renewable energy resources. Surface disturbance for an assumed renewable energy development scenario could total 4,000 acres, about 0.3 percent of the decision area. Wind and solar power developments would have to be compatible with the management prescriptions for other resources and would be evaluated on a project-specific basis. Biomass development would be based on the acreage of vegetation treatment needed to restore healthy vegetation communities. Alternative B would meet the goal for the renewable energy program.

Alternative C

Impacts from Renewable Energy Management Actions. The management actions under Alternative C would be the same as the Proposed RMP. Thus, impacts would be the same. The primary impact of management actions under Alternative C would be to facilitate the development of renewable energy resources. There would be no change in how applications for renewable energy development projects are processed.

Impacts from Other Programs. Effects on renewable energy development associated with management actions for vegetation, fish and wildlife, special status species, wild horses, cultural resources, visual resources, recreation, livestock grazing, and geology and mineral extraction would be the same as described for the Proposed RMP.

Lands and Realty. Renewable energy projects, such as wind farms and concentrated solar power development, could be impacted by land use authorizations for power plants, disposals of land resulting in commercial or residential developments, and other lands and realty actions resulting in siting constraints for these large facilities. Approximately 295,200 acres are identified for possible disposal, which is a small percentage of the lands with high potential for renewable energy.

Special Designations. The designation of 20 ACECs (3 existing plus 17 new) would create right-of-way exclusion and avoidance areas that could limit the siting of renewable energy development projects and the transmission lines required to connect them to the transmission grid. Due to the generally small size, topographic features, and dispersed locations of the proposed ACECs, the impact is expected to be small. The three desert tortoise ACECs located in the Mojave Desert region of the planning area (see Section 2.7.22) would affect the location of solar energy projects. ACECs, wilderness study areas, and designated wilderness would affect 75,800 acres with wind energy potential and 491,500 acres with solar energy potential.

Conclusion. The primary impact of Alternative C would be to facilitate the development of renewable energy resources. Surface disturbance for an assumed renewable energy development scenario could total 4,000 acres, about 0.03 percent of the decision area. Wind and solar power developments would have to be compatible with the management prescriptions for other resources and would be evaluated on a project-specific basis. Biomass development would be based on the acreage of vegetation treatment needed to restore healthy vegetation communities. Alternative C would meet the goal for the renewable energy program.

Alternative D

Impacts from Renewable Energy Management Actions. By not allowing land use authorizations for renewable energy projects, Alternative D would essentially prohibit the development of renewable energy within the decision area.

Impacts from Other Programs. Because Alternative D would essentially prohibit the development of renewable energy projects, interactions with the management actions of other resource programs would be inconsequential.

Conclusion. Under Alternative D, renewable energy development on public lands would be effectively eliminated through the prohibition on new land use authorizations. Alternative D would not meet the goal for the renewable energy program.

4.14 Travel Management and Off-highway Vehicle Use

Impact Issues

The primary impact issues associated with transportation is accessibility throughout the planning area and the proliferation of roads developed through use. Additionally, the use of motorized vehicles on public lands is increasing for recreation as well as for personal transportation.

Assumptions for Analysis

- The demand for off-highway vehicle use in the planning area would continue to increase over time.
- Transportation plans for the entire planning area would be completed in approximately 10 years following approval of the RMP.

Interactions with Other Programs

The travel management and off-highway vehicle use program within the planning area potentially would be affected by management actions within the resource programs for lands and realty, renewable energy, recreation, livestock grazing, geology and mineral extraction, and special designations.

Goal

Provide and maintain suitable access to public lands. Manage off-highway vehicle use to protect resource values, promote public safety, provide off-highway vehicle opportunities where appropriate, and minimize conflict. Work closely with local, state, tribal, and other affected parties and other resource users to address off-highway vehicle management including land use and route designations, and monitoring and adaptive management strategies such as applying the Limits of Acceptable Change process.

Objective

To manage motorized vehicle traffic to sustain this type of use while protecting sensitive resources and providing access.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to travel management and off-highway vehicle use also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. Mitigation measures were considered within the following impact analysis section in response to anticipated impacts. Additional "proposed mitigation" for travel management and off-highway vehicle use is identified in Section 4.29, Proposed Mitigation and Potential Effectiveness. In order to be carried forward as part of the Approved RMP, these "proposed mitigation measures" would have to be incorporated into the final decision documented in the Record of Decision. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Travel Management and Off-highway Vehicle Use Management Actions.

Parameter – Transportation Plan

Under the Proposed RMP, motorized travel on approximately 10.3 million acres (90 percent) of the decision area would be limited initially to existing roads and trails and subsequently to designated roads and trails, as determined through a subsequent public process and area-specific analysis. No areas would be designated as open to cross-country travel. There is a considerable range of public opinion as to how off-highway vehicle use in the planning area should be managed. Some believe that the majority of the planning area should be open to unrestricted cross-country travel, as is the case under current management, while others believe that the entire planning area should be closed to off-highway vehicle use. By preparing area-specific transportation plans over a 10 year period, road and trail designations would be updated to consider current uses and conflicts. While some reduction in access may occur in the short term, the motorized access would be improved in the long term by emphasizing specific needs. The elimination of areas open to cross-country off-highway vehicle use would reduce motorized access to parts of the planning area not served by existing or designated roads and trails in both the short and long terms. However, the Proposed RMP strikes a balance concerning the use of off-highway vehicles and protection of other resources, and this management direction is consistent with BLM policy that is being implemented in other Field Offices as existing RMPs are amended or replaced.

Parameter – Off-highway Vehicles

As discussed above, off-highway vehicle use designations would focus on the elimination of open areas and designating roads and trails in limited areas. Closed areas would be limited to designated wilderness and wilderness study areas. Updating road and trail designations on a watershed basis through the transportation planning process would allow for improved access in the long term, with some reduction in accessibility in the short term, and meet agency, industry, and public transportation and access needs.

Impacts from Other Programs. There are few impacts to travel management from other programs. The implementation-level decisions to be made in travel management, such as the designation of routes as open or closed, would be made with consideration of the competing demands for resource use or protection.

Lands and Realty. The Proposed RMP identifies approximately 75,600 acres for possible disposal in the decision area. The potential transfer of lands to private ownership could impact public motorized access to public lands. Potential increase in travel demand also could occur due to land use authorizations and induced growth caused by land disposals. Retaining public rights-of-way through potential land disposals could decrease the impact to public access. Impacts associated with these activities would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Renewable Energy. Renewable energy development would have impacts on transportation similar to minerals, oil, gas, and geothermal development. There is the potential for increased road use and the construction of new access roads as renewable energy sites are developed. The areas of high wind potential tend to be located on top of ridge lines, which would require the construction of new access roads to reach due to the lack of roads in these areas. Such roads would be incorporated into existing or newly developed transportation plans. Based on the comparatively small acreage of high potential wind areas within the planning area, it is anticipated that impacts on transportation would be minimal. Impacts associated with these activities would be mitigated to the extent practicable through the best management practices in Appendix F, Section 3.

Livestock Grazing. The location of some range developments for livestock grazing could potentially affect designation or use of roads and trails. Overall, livestock grazing and related developments would be expected to have minimal impacts on travel management and off-highway vehicle use.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (see Section 4.18), would be distributed throughout the 11.5 million acres of the planning area. Management actions relating to minerals, oil, gas, and geothermal development would have minimal impacts on transportation. Although there is the potential for increased road use as well as the construction of new access roads, based on the total acreage of potential development under the Proposed RMP, transportation would not be substantially impacted by these actions.

Special Designations. The Proposed RMP would manage three wilderness study areas as limited or closed to off-highway vehicles. These closures would reduce opportunities for motorized access. There are 20 ACECs proposed in this alternative. ACEC management prescriptions for five of these areas (Baking Powder Flat, Highland Range, Schlesser Pincushion, Swamp Cedar, and White River Valley) would limit motorized access for the protection of sensitive plant species. Management prescriptions for the three desert tortoise ACECs (Mormon Mesa, Kane Springs, and Beaver Dam Slope) would close or limit the areas to motorized access for the protection of desert tortoise.

Conclusion. The elimination of areas open to cross-country vehicle travel would reduce motorized access to parts of the planning area not served by existing or designated roads and trails in the short and long term. Completing road and trail designations in site-specific travel management plans would improve motorized access and road and trail conditions over the long term. The Proposed RMP would meet the goal for the travel management and off-highway vehicle use program.

Alternative A

Impacts from Travel Management and Off-highway Vehicle Use Management Actions.

Parameter – Transportation Plan
Under Alternative A, motorized vehicle use, including off-highway vehicle use, would be managed in accordance with the current open, limited, and closed designations, allowing cross-country off-highway vehicle use throughout 9.8 million acres (86 percent) of the decision area. Roads and trails would be designated as open or closed on a case-by-case basis, as necessary for resource management. This management approach would result in very limited changes in the transportation and access available in the planning area.

Parameter – Off-highway Vehicles
As discussed above, Alternative A would result in very little change in off-highway vehicle use or motorized access in the planning area. Alternative A would provide the most off-highway vehicle access of all alternatives considered. However, Alternative A also would pose the highest likelihood of potential conflict between off-highway vehicle users and other resource users.

Impacts from Other Programs. Under Alternative A, travel management and off-highway vehicle use impacts associated with renewable energy and livestock grazing activities would be similar to those described for the Proposed RMP.

Lands and Realty. Alternative A identifies approximately 31,900 acres for possible disposal in the decision area. The potential transfer of lands to private ownership could impact public motorized access to public lands. Potential increase in travel demand also could occur due to land use authorizations and induced growth caused by land disposals. Retaining public rights-of-way through potential land disposals could decrease the impact to public access.

Recreation. Recreation management actions would have minimal impacts on transportation under current management.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP (see Section 4.18). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Special Designations. Vehicle use within the three wilderness study areas would be limited to designated roads and trails or closed. The three existing desert tortoise ACECs also would be designated as limited or closed to off-highway vehicle use. These closures would reduce opportunities for motorized access.

Conclusion. The current management program addresses transportation issues as they arise and on a case-by-case basis. Continuation of an open designation for 9.8 million acres (86 percent) of the decision area provides for the greatest accessibility but would result in increased damage to resources and increased conflicts between other resource users and off-highway vehicle users over time. Alternative A would not meet the goal for the travel management and off-highway vehicle use program.

Alternative B

Impacts from Travel Management and Off-highway Vehicle Use Management Actions.

Parameter – Transportation Plan
Under Alternative B, impacts from the transportation plan management actions would be the same as those discussed for the Proposed RMP.

Parameter – Off-highway Vehicles
Under Alternative B, impacts from the off-highway vehicle use management actions would be the same as those discussed for the Proposed RMP.

Impacts from Other Programs. Travel management and off-highway vehicle use impacts associated with renewable energy, livestock grazing, geology and mineral extraction, and special designations would be similar to those described for the Proposed RMP.

Lands and Realty. Alternative B identifies approximately 90,600 acres for possible disposal in the decision area. The potential transfer of lands to private ownership could impact public motorized access to public lands. Potential increase in travel demand also could occur due to land use authorizations and induced growth caused by land disposals. Retaining public rights-of-way through potential land disposals could decrease the impact to public access.

Recreation. Five special recreation management areas would emphasize motorized recreation. Motorized vehicle routes would be retained in the two special recreation permit areas used for motorcycle race events, and for two competitive truck events. These management actions would enhance motorized access in these 9 areas in the long term.

Conclusion. The elimination of areas open to cross-country vehicle travel would reduce motorized access to parts of the planning area not served by existing or designated roads and trails in the short and long term. Completing road and trail designations in site-specific travel management plans would improve motorized access and road and trail conditions over the long term. Alternative B would meet the goal for the travel management and off-highway vehicle use program.

Alternative C

Impacts from Travel Management and Off-highway Vehicle Use Management Actions.

Parameter – Transportation Plan

Under Alternative C, impacts from the transportation plan management actions would be the same as those discussed for the Proposed RMP.

Parameter – Off-highway Vehicles

Impacts from the off-highway vehicle use management actions would be very similar to those discussed for the Proposed RMP. This alternative would designate 32,000 acres of dry lake beds as open to cross-country off-highway vehicle use, which would not substantially change the availability of access in the planning area.

Impacts from Other Programs. Under Alternative C, travel management and off-highway vehicle use impacts associated with renewable energy, livestock grazing, geology and mineral extraction, and special designations activities would be similar to those described for the Proposed RMP.

Lands and Realty. Alternative C identifies approximately 295,200 acres for possible disposal in the decision area. The potential transfer of lands to private ownership could impact public motorized access to public lands. Potential increase in travel demand also could occur due to land use authorizations and induced growth caused by land disposals. Retaining public rights-of-way through potential land disposals could decrease the impact to public access.

Recreation. Five special recreation management areas would include an emphasis on future motorized road and trail designations, as well as new motorized trail construction. Motorized vehicle routes would be retained in the four special recreation permit areas used for motorcycle race events, and 12 routes would be designated for competitive truck events. These management actions would enhance motorized access in these 21 areas in the long term.

Conclusion. The reduction of areas open to cross-country vehicle travel from 9.8 million acres to 32,000 acres would reduce motorized access to parts of the planning area not served by existing or designated roads and trails in the short and long term. Completing road and trail designations in site-specific travel management plans would improve motorized access and road and trail conditions over the long term. Alternative C would meet the goal for the travel management and off-highway vehicle use program.

Alternative D

Impacts from Travel Management and Off-highway Vehicle Use Management Actions.

Parameter – Transportation Plan
Under Alternative D, motorized travel would be limited to currently maintained roads and trails. This management action would not provide for current access needs and would greatly restrict the ability of the Ely Field Office to meet future needs for transportation and access.

Parameter – Off-highway Vehicles
Under Alternative D, 11.0 million acres (96 percent) of the decision area would be closed to off-highway vehicle use. This closure would severely limit the access opportunities for all users of the planning area.

Impacts from Other Programs. Under this alternative, discretionary actions and authorizations would be eliminated within the decision area. Because travel management and off-highway vehicle use also would be limited by closure of most of the planning area, decisions related to the few remaining resource programs would have little additional impact on travel and off-highway vehicle use.

Lands and Realty. Alternative D identifies approximately 12,400 acres for possible disposal in the decision area. The potential transfer of lands to private ownership could impact public motorized access to public lands. Potential increase in travel demand also could occur due to induced growth caused by land disposals. Retaining public rights-of-way through potential land disposals could decrease the impact to public access. No new rights-of-way would be granted. This would limit travel management options in the long term.

Renewable Energy. Under Alternative D, rights-of-way for renewable energy development would not be granted. Thus, this program would have no effects on transportation in the planning area.

Recreation. Under Alternative D, no special recreation management areas that emphasize motorized recreation and no motorcycle or truck race courses would be designated. This would further limit motorized travel and off-highway vehicle access opportunities in the short and long term.

Livestock Grazing. Because livestock grazing would be effectively eliminated within the decision area, there would be no impact of this program on travel and off-highway vehicle use.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario (see Section 4.18). Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Special Designations. ACECs would not be designated under Alternative D, so these special designations would not have any effect on travel management. Designated wilderness and wilderness study areas would be managed the same as the Proposed RMP.

Conclusion. The management actions under Alternative D would substantially restrict motorized access in the planning area in the short and long term by limiting off-highway vehicle use to maintained roads and trails. The lack of new land authorizations for roads would reduce accessibility in the long term. Alternative D would not meet the goal for the travel management and off-highway vehicle use program.

4.15 Recreation

Impact Issues

The primary impact issue associated with recreation is related to conflicts with other resource programs. As recreation use in the planning area increases, it is anticipated that recreational activities would have an increasing potential for conflicts with other resources.

Assumptions for Analysis

- Dispersed recreation use in the planning area would continue to increase over time regardless of any management actions proposed in this Proposed RMP.
- Establishing special recreation management areas would increase recreation in these areas.
- All recreation area management plans will incorporate the guidance contained in Appendix C of the BLM Land Use Planning Handbook.

Interactions with Other Programs

The recreation management program within the planning area potentially would be affected by management actions within the resource programs for vegetation, fish and wildlife, special status species, wild horses, cultural resources, paleontological resources, visual resources, lands and realty, renewable energy, travel management and off-highway vehicle use, geology and mineral extraction, noxious and invasive weed management, and special designations.

Goal

Provide quality settings for developed and undeveloped recreation experiences and opportunities while protecting resources. Conduct an assessment of current and future off-highway vehicle demand, and plan for and balance the demand for this use with other multiple uses/users. Develop sustainable off-highway vehicle use areas to meet current and future demands, especially for urban interface areas.

Objective

To provide a wide variety of recreation opportunities to satisfy a growing demand by a public seeking the open, undeveloped spaces that are characteristic of the planning area.

To provide visitor information to familiarize people with recreational opportunities throughout the planning area and encourage minimum impact or “Leave No Trace” and “Tread Lightly” recreational skills and ethics for recreational activities.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to recreation also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Recreation Management Actions.

Parameter – Special Recreation Management Areas

The establishment of four new and retention of one existing special recreation management areas totaling approximately 1.2 million acres across the decision area would be responsive to the shift in recreation demand in eastern Nevada in recent years. These areas would include trail designations in subsequent transportation plans and may consider new trail construction during site-specific planning. The Loneliest Highway Special Recreation Management Area would continue to provide recreation opportunities along U.S. Highway 50.

Off-highway Motorcycle Race

Photo by Jake Rajala

Parameter – Special Recreation Permits

The designation of four motorcycle special recreation permit areas to provide routes for motorcycle competitive events and four truck routes for up to two competitive truck events per calendar year would allow opportunities for competitive motorized vehicle recreation, while providing protection to other resources. Allowing non-competitive off-highway vehicle events on a case-by-case basis would allow flexibility to adapt management to environmental conditions. By monitoring outfitter and guide hunting operations in the planning area over a three-year period, it will be possible to determine if permit special stipulations and conditions are appropriate to protect resources and prevent user conflicts. This system is not expected to impact the ability of individual outfitters to operate on the planning area, while minimizing the potential for conflicts with other commercial operations.

Impacts from Other Programs.

Vegetation. The areas affected by vegetation treatments would total approximately 7.1 million acres, or 62 percent of the decision area. However, this treatment would be spread over 50 or more years, allowing vegetation in treated areas to recover as new areas are treated. Treatments would result in reduced area available for recreation during the short term after the treatment, but healthier watershed conditions would be present in the long term. Treatment programs that would enhanced aesthetics, such as vegetation management to restore riparian areas and reduce competition in aspen stands, could improve the recreation experience. As watershed restoration occurs, there also is the possibility that closures to motorized vehicles would be required to supplement restoration activities. This could lead to a reduction in recreational opportunities associated with off-highway motorized vehicle use and an increased opportunity for seclusion and primitive recreation.

Fish and Wildlife. Increased species distribution and diversity would enhance aesthetics and increase wildlife viewing opportunities as well as improve fishing and hunting opportunities. Additionally, re-introduction of big game species in cooperation with the Nevada Department of Wildlife would enhance hunting activities. Permitted activities, including special recreation permits, could be restricted during certain periods (e.g., calving/fawning/lambing season and possibly summer or winter) in priority wildlife habitats. This may restrict the scheduling for competitive events within special recreation permit areas.

Special Status Species. Management actions designed to protect special status species (especially greater sage-grouse and desert tortoise) and enhance their habitats would impose some constraints on organized recreational events. For example, permitted activities would be restricted where appropriate from March 1 through May 15 within 2 miles of sage-grouse leks and from May 1 through July 15 within 0.5 miles of raptor nest sites. Within desert tortoise habitat, restrictions include seasonal restriction as well as numerous recreation management actions focused on protection of the species within the three desert tortoise ACECs by limiting number, location, procedures, and timing of events.

Wild Horses. Management for smaller numbers of wild horses would result in a slight reduction in recreation opportunities for viewing wild horses. Where herd management areas overlap with the Chief Mountain Special Recreation Management Area, opportunities for viewing wild horses may be enhanced.

Cultural Resources. The Proposed RMP emphasizes the restoration of at-risk resources. Conservation Use, Scientific Use, and Public Use allocations are being emphasized in this alternative. It is anticipated that these management actions would enhance recreation opportunities and experiences at Public Use sites as compared to current management. They also would place greater recreational use restrictions on Scientific Use and Conservation Use sites.

Paleontological Resources. Management of paleontological resources under the Proposed RMP would have some minimal impacts on recreation through the implementation of a no-fee registration system established for trilobite collecting.

Visual Resources. An increase in Visual Resource Management Class II and III designations and decrease in Class IV designations across the decision area would place higher emphasis on scenic values than current management. Placing more emphasis on preserving the scenic character would enhance recreational experiences in the planning area.

Lands and Realty. Management actions for the lands and realty program would minimally impact recreation through the possible disposal and leasing of lands containing recreation opportunities. The disposal of lands for the express purpose of creating parks would enhance recreation opportunities. The disposal of lands near communities would move public lands, and the recreational opportunities afforded by those public lands, further away from those living in or visiting those communities. This effect would be partially offset if lands disposed of near communities were designated for recreational purposes.

Renewable Energy. Renewable energy development could have localized impacts on recreation. Although applications for renewable energy development would be processed on a case-by-case basis, the large surface area required for wind (up to 40,000 acres) or solar development would likely exclude recreation in the permitted area.

Travel Management and Off-highway Vehicle Use. The Proposed RMP designates all wilderness study areas as closed to off-highway vehicle use. The remainder of the decision area would be limited to designated roads and trails as determined through subsequent site-specific plans and analyses. These changes in off-highway vehicle designations would enhance opportunities for non-motorized recreation in wilderness study areas and other areas that are remote from designated roads and trails. Changing travel designations from open to limited would reduce opportunities for motorized recreation in the short term, but enhance motorized recreation experiences in the long term by closing poorly engineered and constructed roads and trails and designating or constructing better engineered roads and trails.

Geology and Mineral Extraction. Management actions relating to minerals, oil, gas, and geothermal development would have minimal impacts on recreation. Based on the reasonably foreseeable development scenario, approximately 17,100 acres would be disturbed by mineral activities with a minimal chance for interaction with recreation activities.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available) and other tools would be used to the greatest extent practical under the Proposed RMP. During project implementation, wildland fire use events, and suppression activities associated with wildland fires, recreational opportunities could be temporarily displaced from the area.

Noxious and Invasive Weed Management. Management of noxious and invasive weeds would have minimal impacts on recreation. The elimination of weed infestations would make treated areas more attractive for recreation.

Special Designations. Three existing ACECs, 17 new ACECs, and two new Back Country Byways would be designated. ACECs would be managed to protect the resources for which they were designated. Such management could restrict certain types of recreation (motorized activities for example), but it also may facilitate other types of recreation such as sight seeing. Thus, recreation impacts from ACEC designations are anticipated to be minimal. The Proposed RMP would close all designated wilderness and close or limit wilderness study areas to off-highway vehicle use, affecting recreation activities that use off-highway vehicles as a method of transportation. The Back Country Byways would facilitate motorized viewing of some of the most scenic areas in the planning area.

Conclusion. The Proposed RMP would constitute a comprehensive program that addresses the trend of increasing recreational use as well as provides the opportunity to develop management strategies for anticipated future conditions. Five special recreation management areas totaling approximately 1.2 million acres (10 percent of the decision area) would be designated. Elimination of areas designated as open to cross-country off-highway vehicle use would reduce off-highway motorized recreational opportunities. However, these transportation restrictions also would provide an increased opportunity for seclusion and primitive recreational experiences. A sufficient number of routes would be designated to accommodate motorcycle and truck competitive events. The Proposed RMP would meet the goal for the recreation program.

Alternative A

Impacts from Recreation Management Actions.

Parameter – Special Recreation Management Areas

The Loneliest Highway Special Recreation Management Area would continue to provide recreation opportunities along U.S. Highway 50. However, failure to establish additional special recreation management areas would create a lesser range of recreational opportunities as compared to the Proposed RMP. Existing recreation facilities would be maintained and recreation area management plans would be developed on an as-needed basis. But as recreation use continues to increase over time, the limited number of recreation sites eventually could lead to increased competition for recreation opportunities. With only one special recreation management area in the decision area, which would not emphasize opportunities for motorized recreation, and no further creation of developed recreation sites, the ability to manage recreation as a primary objective in areas with high recreation potential would be constrained.

Parameter – Special Recreation Permits

The failure to create motorcycle special recreation permit areas and truck race routes, while still permitting up to 12 motorcycle and 2 truck events per year, would allow opportunities for competitive motorized vehicle recreation but could cause damage to race routes and other resources due to the number of competitive events being allowed each year. Allowing non-competitive off-highway vehicle events on a case-by-case basis would allow the flexibility to adapt management to environmental conditions. The failure to create a proactive system of managing outfitter and guide permits could lead to the degradation of resources and the recreational experience for all hunters.

Impacts from Other Programs. Recreation impacts associated with special status species, lands and realty, renewable energy, and noxious and invasive weed management activities would be the same as described for the Proposed RMP.

Vegetation. The areas affected by vegetation treatments would total approximately 2.9 million acres, or 25 percent of the decision area. The impacts of these treatments to recreation would be similar to those described for the Proposed RMP.

Fish and Wildlife. This alternative would not involve identification of priority wildlife habitats or recreational constraints in these areas; therefore impacts to recreation from the fish and wildlife program would be substantially less than with the Proposed RMP.

Wild Horses. The current management of wild horses would have minimal impact on recreational viewing opportunities as all existing herd management areas would be retained.

Cultural Resources. Alternative A is primarily a program of monitoring selected sites and managing for future cultural resource use allocations. Restrictions to access of cultural resources of scientific value, such as cave restrictions or closures, would restrict access for recreational activities. However, opportunities for cultural resources interpretation would result in increased interpretive recreation opportunities.

Paleontological Resources. Management of paleontological resources under Alternative A would have minimal impacts on recreation. No registration system would be in place for trilobite collecting, which could lead to over-collection of trilobites and degradation of that recreational resource.

Visual Resources. Having no visual resource management class designations on 3.6 million acres of the decision area would have minimal effects on recreation within the unclassified area. Less land would be managed for Visual Resource Management Class I and II objectives, foregoing indirect enhancement of recreation.

Travel Management and Off-highway Vehicle Use. Approximately 9.8 million acres (86 percent of the decision area) would remain classified as open to off-highway vehicle use. Only the designated wilderness would be closed to vehicle use, while vehicle use would be limited to designated roads and trails in all wilderness study areas and within the Desert Tortoise ACECs. These travel management actions would continue to provide a substantial recreation opportunity for motorized off-highway vehicle use, as well as hunting and other types of recreation activities that would use off-highway vehicles as a transportation method. However, Alternative A also would pose the highest likelihood of conflicts between off-highway vehicle users and other non-motorized recreation users.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the

8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP (see Section 4.18). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development. Like the Proposed RMP, this level of expected development would have minimal effect on either permitted recreation events or dispersed recreation.

Fire Management. Prescribed fire, wildland fire use (approximately 3.6 million acres available) and other tools would be used to the greatest extent practical. During project implementation, wildland fire use events, and suppression activities associated with wildland fires, recreational opportunities could be temporarily displaced from the area.

Special Designations. Under Alternative A, special designations impacts would continue as under the current management program since no new special designations would be proposed. Three existing ACECs would be retained, and no new ACECs or back country byways would be designated. Designated wilderness would be closed to vehicles, and all wilderness study areas and ACECs would be closed or limit off-highway vehicles to designated roads and trails. The rest of the planning area would remain designated as open to off-highway vehicle use. Effects on off-highway vehicle use would be minimal, but the benefits of designations to other recreational users would not be realized.

Conclusion. As recreation use continues to increase over time, the limited number of recreation sites in Alternative A eventually would lead to increased competition for recreation opportunities. With only one 750,000-acre special recreation management area in the decision area and no further creation of developed recreation sites, the ability of the Ely Field Office to manage recreation as a primary objective in areas with high recreation potential would be constrained. About 9.8 million acres (86 percent of the decision area) would remain open to cross-country off-highway vehicle travel, resulting in no reduction in off-highway motorized recreational opportunities. No routes would be designated for motorcycle and truck competitive events, but such events would still be permitted. Alternative A would not meet the goal for the recreation program.

Alternative B

Impacts from Recreation Management Actions.

Parameter – Special Recreation Management Areas

The establishment of nine special recreation management areas totaling approximately 2.7 million acres would create a broad range of recreational opportunities. The establishment of three special recreation management areas with off-highway vehicle emphasis totaling 844,000 acres would offset the elimination of all areas designated as open to cross-country off-highway vehicle use. Other impacts would be similar to those discussed for the Proposed RMP.

Parameter – Special Recreation Permits
The creation of two motorcycle special recreation permit areas and permitting up to two competitive truck events per calendar year would allow opportunities for competitive motorized vehicle recreation, while providing protection to other resources. Allowing non-competitive off-highway vehicle events on a case-by-case basis would allow the flexibility to adapt management to environmental conditions. The failure to create a proactive system of managing outfitter and guide permits could lead to the degradation of resources and the recreational experience for all hunters.

Impacts from Other Programs. Under Alternative B, recreation impacts associated with vegetation, fish and wildlife, special status species, wild horses, cultural resources, paleontological resources, visual resources, lands and realty, renewable energy, travel management and off-highway vehicle use, geology and mineral extraction, fire management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP.

Special Designations. Under Alternative B, 3 existing ACECs, 15 new ACECs, and 1 new back country byway would be designated. The impacts of these designations to recreation would be similar to those described for the Proposed RMP.

Conclusion. Alternative B would constitute a comprehensive program that addresses the trend of increasing recreational use as well as provides the opportunity to develop management strategies for anticipated future conditions. Nine special recreation management areas totaling approximately 2.7 million acres (24 percent of the decision area) would be designated. Elimination of areas designated as open to cross-country off-highway vehicle use would reduce off-highway motorized recreational opportunities. However, these transportation restrictions also would provide an increased opportunity for seclusion and primitive recreational experiences. A reduced number of routes would be designated for motorcycle and truck competitive events, but such events would still be permitted. The Proposed RMP would meet the goal for the recreation program.

Alternative C

Impacts from Recreation Management Actions.

Parameter – Special Recreation Management Areas
The establishment of nine special recreation management areas totaling approximately 2.6 million acres would create a broad range of recreational opportunities. The establishment of four special recreation management areas with off-highway vehicle emphasis totaling 1.1 million acres would offset the elimination of nearly all areas designated as open to cross-country off-highway vehicle use. Other impacts would be similar to those discussed for the Proposed RMP.

Parameter – Special Recreation Permits
The creation of four motorcycle special recreation permit areas and 12 truck race routes for up to 8 competitive truck events per calendar year would allow opportunities for competitive motorized vehicle

recreation, while providing protection to other resources. There would likely be more damage to race routes and other resources due to a greater number of competitive events being allowed each year as compared to the Proposed RMP. Allowing non-competitive off-highway vehicle events on a case-by-case basis would allow the flexibility to adapt management to environmental conditions. The creation of a competitive bid system for issuing outfitter and guide permits would allow the market to determine who receives these permits. This, and the fact that a monitoring system has not been established to determine the number of permits to be issued, could lead to outfitters and guides with less local knowledge acquiring these permits, which could possibly lead to the degradation of resources and hunter conflicts.

Impacts from Other Programs. Under Alternative C, recreation impacts associated with fish and wildlife, special status species, wild horses, visual resources, lands and realty, renewable energy, geology and mineral extraction, and noxious and invasive weed management activities would be the same as or similar to those described for the Proposed RMP, although the acreage of lands proposed for disposal would be substantially greater.

Vegetation/Watershed Management. Under the Alternative C, the areas affected by vegetation treatments would total approximately 7.5 million acres, or 66 percent of the decision area. The impacts of these treatments to recreation would be similar to those described for the Proposed RMP.

Cultural Resources. Alternative C emphasizes responsible commercial activities. Fee sites would be implemented to cover the cost of public site management for several types of cultural sites open to public use. If no fee sites are established for these types of sites, there would be no public use of the sites, and they would be designated for conservation or scientific use. Those sites designated for conservation use might impact areas designated for developed recreation. Overall, the treatment of cultural/archaeological resources under Alternative C could have the impact of reducing access to recreation.

Paleontological Resources. Management of paleontological resources under Alternative C could have slight impacts on recreation. A fee-based registration system would be established for trilobite collecting. This could reduce recreational trilobite collection due to inconvenience and cost of obtaining a permit.

Travel Management and Off-highway Vehicle Use. Travel management actions would be the same as the Proposed RMP with the exception that approximately 32,000 acres would be designated as open to cross-country off-highway vehicle use in dry lake beds. These open areas would provide for the type of motorized recreation that is not drawn to roads and trails.

Fire Management. The fire management approach to wildland fires would involve aggressive suppression where possible. This would reduce effects of fire management on recreational activities in the short term, but could lead to increased effects at some future date when fuel conditions reach the point where suppression of larger fires is not possible. As with the Proposed RMP, impacts of fire management on the recreation program would involve temporary displacement of recreational pursuits during suppression activities and site rehabilitation.

Special Designations. Under Alternative C, 3 existing ACECs, 17 new ACECs, and 2 new back country byways would be designated. The impacts of these designations to recreation would be similar to those described for the Proposed RMP.

Conclusion. Alternative C would constitute a comprehensive program that addresses the trend of increasing recreational use as well as provides the opportunity to develop management strategies for anticipated future conditions. Nine special recreation management areas totaling approximately 2.6 million acres (22 percent of the decision area) would be designated. Reduction but not elimination of areas designated as open to cross-country off-highway vehicle use would reduce off-highway motorized recreational opportunities. However, these transportation restrictions also would provide an increased opportunity for seclusion and primitive recreational experiences. An increased number of routes would be designated to accommodate motorcycle and truck competitive events. The Proposed RMP would meet the goal for the recreation program.

Alternative D

Impacts from Recreation Management Actions.

Parameter – Special Recreation Management Areas

Under Alternative D, all special recreation management areas and existing developed recreation sites would be eliminated. The overall effect of management under this alternative would be a large reduction in recreation opportunities across a broad spectrum.

Parameter – Special Recreation Permits

Under Alternative D, no special recreation permit areas would be established for motorcycle events, and routes would not be designated or permits issued for truck events. With a decrease in areas available in Clark County for organized off-highway competitive events due to protection of the desert tortoise and its habitat, more races have shifted to the planning area. The loss of special recreation permits in the planning area would further restrict opportunities for this type of motorized recreation. Participants would have to travel longer distances for races in areas on public or private land where such activity is authorized. Outfitter and guide permits would no longer be issued. This would eliminate outfitter/guide-supported hunting but would not affect self-supported hunting.

Impacts from Other Programs. Under Alternative D, recreation impacts associated with special status species, wild horses, cultural resources, and noxious and invasive weed management activities would be similar to those described for the Proposed RMP. Impacts associated with fish and wildlife management activities would be similar to Alternative A.

Vegetation/Watershed Management. Under Alternative D, the areas affected by vegetation treatments would be similar to Alternative A, but areas of fire rehabilitation would likely be greater as the suppression of wildland fires would be minimized under this alternative. This would result in reduced access for recreation following treatments or catastrophic wildland fires.

Paleontological Resources. Management of paleontological resources under Alternative D would prohibit trilobite collecting, eliminating a potential recreation opportunity.

Visual Resources. Designation of the entire decision area as Visual Resource Management Class I or II would place the highest emphasis on scenic values, thus preserving the scenic character and enhancing recreational experiences in the planning area.

Lands and Realty. Under this alternative, the extent of lands available for disposal (approximately 12,400 acres) and the area affected by corridors and land use authorizations would be substantially less than in the Proposed RMP. Thus, effects to recreation, likewise, would be substantially reduced.

Renewable Energy. Under Alternative D, no renewable energy projects would be authorized, so there would be no impacts to recreation.

Travel Management and Off-highway Vehicle Use. Management actions for off-highway vehicles would restrict motorized vehicles to mechanically maintained roads and trails. This would subsequently reduce recreation opportunities in the planning area.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario (see Section 4.18). Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Special Designations. Removal of all special designations would have moderate impacts on recreation. Special designations are designed to protect resources and prevent conflicts among resource users. Loss of resources and increased conflicts would impact recreation users in the planning area. Further, the elimination of back country byways would reduce recreation opportunities.

Conclusion. Under Alternative D, the spectrum of recreation opportunities on BLM-administered lands would be greatly reduced, as there would be no special recreation management areas designated, no special recreation permits issued, and all existing developed recreation sites would be eliminated. Alternative D would not meet the goal for the recreation program.

4.16 Livestock Grazing

Impact Issues

Almost all of the 11.5 million acres of public land within the planning area, with the exception of 203,670 acres within the three existing ACECs, currently are available for livestock grazing, based on decisions included in previous land use plans prepared for the Egan, Schell, and Caliente resources areas that are now administered by the Ely Field Office. Suitability of the public lands administered by the Ely Field Office for livestock grazing is a decision addressed in previous land use plans and is not addressed in this planning document except as related to specific areas considered within individual alternatives.

The primary impact issues associated with livestock grazing relate to the potential reductions in area available for general livestock grazing or for grazing of specific types of livestock in certain areas (see **Table 4.16-1**). These additional constraints generally relate to land disposals, fire rehabilitation, and protection of habitat for special status species (both within and outside of ACECs). Additionally, livestock grazing may be affected to lesser degrees on areas remaining available for grazing through competition or conflict with other resource users (e.g., mineral development, recreation, wild horses, and wildlife), or through the need to properly protect other resources such as soils, vegetation, and wildlife habitat. Adjustments in season of grazing, grazing intensity, kind and class of livestock, or type of grazing system may be necessary in relation to some of these conflicts.

Table 4.16-1
Summary of Lands Unavailable for Livestock Grazing by Alternative

	Acreages Available or Unavailable for Grazing by Alternative[1]				
Acreage Category	**Proposed RMP**	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Total Public Land in Planning Area	11,500,000	11,500,000	11,500,000	11,500,000	11,500,000
Lands Unavailable for Grazing					
ACECs					
Existing ACECs	203,670	203,670	203,670	203,670	0
New ACECs	120	0	14,900	6,400	0
Private/Utah Allotment	4,400	4,400	4,400	4,400	0
Area West of Highway 93	6,900	6,900	6,900	6,900	0
Leased public land near Coyote Springs Development	6,200	6,200	6,200	6,200	0
Desert Tortoise Habitat Outside ACECs	0	0	542,100	0	0
Bighorn Sheep Habitat	0	0	3,038,100	0	0
General Elimination of Livestock Grazing	0	0	0	0	11,500,000
Total Area Unavailable to All Livestock Grazing	221,290	221,170	3,816,270	227,570	11,500,000
Total Area Available for Livestock Grazing	11,278,710	11,278,830	7,683,730	11,272,430	0

[1] Exclusive of potential losses associated with additional land disposal actions. Numbers rounded to simplify presentation.

Assumptions for Analysis

- Market demands for livestock products are highly variable. It is assumed that current market demands for livestock products would continue throughout the next several decades with a continuing demand for grazing of the public lands.

- Livestock grazing use would be authorized dependent on forage availability.

- The Nevada Department of Wildlife would manage populations of big game (i.e., mule deer, elk, pronghorn antelope, and bighorn sheep) commensurate with available forage and with consideration of other multiple uses.

- Appropriate management level for wild horse herds would be achieved and maintained for all alternatives except Alternative D.

Interactions with Other Programs

The livestock grazing management program within the planning area potentially would be affected by actions within the resource management programs for vegetation, special status species, wild horses, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, forest/woodland and other plant products, geology and mineral extraction, watershed management, fire management, noxious and invasive weed management, and special designations.

Goal

Manage livestock grazing on public lands to provide for a level of livestock grazing consistent with multiple use, sustained yield, and watershed function and health.

Northeastern Great Basin Area Standards

- Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

- Riparian and wetland areas exhibit a properly functioning condition and achieve State water quality criteria.

- Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Mojave-Southern Great Basin Area Standards

- Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.

- Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

- Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Objective

To allow livestock grazing to occur in a manner and at levels consistent with multiple use, sustained yield, and the standards for rangeland health.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to livestock grazing also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Livestock Grazing Management Actions. The authorization of 545,267 animal unit months on 11.3 million acres of public lands within the Ely planning area is expected to meet the RMP goals and objectives.

Approximately 424,602 animal unit months on 8.4 million acres (72 percent of the Ely planning area) would be authorized on grazing allotments that have been determined to be currently meeting or making progress toward achievement of standards for rangeland health (see **Table 2.4-15**). Approximately 42,576 animal unit months (part of the 424,602 animal unit months) would be continued on grazing allotments within desert tortoise habitat, but outside the three desert tortoise ACECs (see **Table 2.4-14**). Maintenance and improvement in the desired range of conditions for vegetation will continue. Changes, such as improved livestock management, new range improvement projects, and changes in the amount and kinds of forage permanently available for livestock use, can lead to changes in grazing preference, authorized season of use, and kinds of livestock. Over the long term, such changes will continue to meet RMP goals and objectives, including the standards for rangeland health.

The authorization of 120,665 animal unit months on 3.2 million acres (27 percent of the Ely planning area) would be maintained on grazing allotments pending their evaluation for meeting rangeland health standards which will be completed by 2009 (see **Table 2.4-16**). In the short term, there may be impacts from livestock grazing that would be considered a causal factor in not attaining or making progress towards the rangeland health standards. As the grazing allotments are evaluated and changes, such as improved livestock management, new range improvement projects, and changes in the amount and kinds of forage permanently available for livestock use, may lead to changes in grazing preference, authorized season of use, or kinds of livestock. Over the long term, the implementations of such changes are expected to continue to meet RMP goals and objectives, including the standards for rangeland health.

Approximately 5,658 animal unit months on 203,670 acres (2 percent of the Ely planning area) will remain unavailable for livestock grazing in the Mormon Mesa, Kane Springs, and Beaver Dam Slope ACECs and associated grazing allotments (see **Map 2.4.16-1**).

Protection of newly designated ACECs would result in another 120 acres being unavailable to livestock grazing. Additional rangeland improvements, changes in season of use, or livestock numbers may be required in the short term to ensure protection of the ACECs.

Other areas of public lands unavailable for livestock grazing include the Private/Utah Allotment, lands west of Highway 93 at the south end of the planning area, and leased lands near Coyote Springs Development. As shown in **Table 4.16-1**, these areas total approximately 17,500 acres.

In accordance with current BLM policy, management of domestic sheep and goats in areas of occupied bighorn sheep habitat could potentially be affected. Management changes affecting domestic sheep and goats may occur when proposed changes to BLM grazing permits are considered. **Table 4.16-2** presents the potential animal unit months for domestic sheep and goat grazing that could be affected in association with occupied desert and Rocky Mountain bighorn sheep habitat. Adjustments to animal unit months for sheep and goat grazing will be subject to review on a case-by-case basis.

The Proposed RMP provides for the management of allotments that become vacant where it is consistent with protection of watershed health and multiple use objectives. In the short term, this could offset effects of temporary fire rehabilitation closures, implementation of other vegetation improvement activities, and, in some cases, drought relief. In the long term, relinquished permits will meet RMP goals and objectives including the standards for rangeland health.

Table 4.16-2
Potential Effect of Desert and Rocky Mountain Bighorn Sheep Management of Occupied Habitat on Domestic Sheep Allotments

Allotment Name	Use Area	Map Unit Number[1]	Allotment Area (Acres)	Percent of Allotment in Occupied Habitat	Occupied Habitat (Acres)	Potential Domestic Sheep Use Affected (Animal Unit Months)
Crescent N-4		48	61,470	9	5,716	88
Duckwater		66	856,980	3	23,306	635
Fox Mountain		74	73,414	16	11,456	986
Hamblin Valley		88	105,831	2	2,155	167
Irish Mountain		99	83,463	6	2,050	180
Majors Allotment		110	99,193	2	4,791	259
Narrows		133	7,136	56	4,003	300
South Spring Valley		198	79,323	0	73	6
Wilson Creek	Deadman	230c	61,914	37	22,739	ND[3]
Wilson Creek	Dry Lake Valley	230e	104,898	3	2,812	ND[3]
Wilson Creek	Muleshoe/Maloy	230i	121,891	15	18,401	ND[3]
Wilson Creek	Thorley	230o	27,507	9	2,539	ND[3]
Totals					**100,041**	

[1] Map Unit Number refers to map units shown on **Map 2.4.16-1**.

[2] Sheep use not determined for individual use areas.

Implementation of specific management actions (e.g., seasons of use and levels of allowable use) on grazing allotments in desert tortoise habitat will aid in the recovery plan for desert tortoise. In the short term, restricting utilization limits on available forage in specific seasons of use will allow for more available forage for desert tortoise. Continued monitoring of desert tortoise habitat to ensure that a minimum of 15 percent canopy cover remains within each ecological site, adjustment of livestock stocking levels in the event of unusual climatic conditions, and removal of livestock on areas unavailable to livestock grazing will, in the long term, improve habitat for desert tortoise.

Impacts from Other Programs.

Vegetation. The area identified for potential vegetation treatments under the Proposed RMP is more than twice that of current management. It is expected that the area treated each year also would be substantially greater under the Proposed RMP. It is estimated that a total area in excess of 100,000 acres could be affected at a given time under the Proposed RMP. This could require short-term changes to livestock use such as temporary reductions in livestock grazing and temporary closure of the treatment areas on affected allotments. Treatment areas or portions of allotments would be unavailable until objectives are met or other determinations are made by the line officer. Livestock grazing use could be authorized on other areas of the allotment and not require temporary reductions in stocking levels. It is unlikely, however, that all of the treated areas would involve seeding or other activities that would interfere with continuing a livestock grazing program. Selection of areas and methods for treatment would occur at the watershed analysis stage, with efforts being made to prevent excessive areas being treated concurrently within the same grazing allotment or watershed.

Special Status Species. The three desert tortoise ACECs (totaling 203,670 acres) will continue to be unavailable for livestock grazing and livestock grazing management will be adjusted as necessary to maintain quality habitat in areas of desert tortoise habitat outside the three ACECs. This includes constraints on season of use and level of use by livestock, as well as other specific desert tortoise mitigation measures outlined in Section 2.4.16. Grazing would be permitted from March 1 to October 31 with use not to exceed 40 percent on key perennial plant species. Between November 1 and February 28/29, utilization would be allowed to reach 50 percent on key perennial grasses and 45 percent on key shrubs and forbs. Livestock grazing within the Lower Meadow Valley Wash ACEC would be controlled by terms and conditions and season of use restrictions on the grazing permits to avoid impacts during the nesting season to the Southwestern willow flycatcher and the yellow-billed cuckoo.

Livestock use also would be adjusted to maintain quality habitat for greater sage-grouse and various other special status species. This could affect season of use, level of use, and kind of livestock. Needed adjustments would be determined through the watershed analysis process.

Wild Horses. Under the Proposed RMP, several of the existing herd management areas would be eliminated and wild horse management would focus on those areas where conditions exist to sustain viable populations in a thriving natural ecological balance. This change in management would eliminate wild horse competition and conflicts with livestock in those areas. Management to maintain wild horse populations on the remaining herd management areas to the appropriate management levels would limit the degree of competition with livestock in those areas. Domestic horse grazing permits will not be authorized within wild horse herd management areas, thus limiting where such use could occur.

Lands and Realty. Under the Proposed RMP, approximately 75,600 acres would be available for possible disposal (see Section 2.4.12.2 for details). Adjustment or elimination of affected livestock grazing allotments would occur if and when these lands are sold. Impacts from land disposal would be long term or permanent. Changes to livestock grazing use resulting from reduced land acreage due to land disposals could include one or more of the following actions: reductions in stocking levels; distribution of livestock to other areas; a shorter grazing period; more intensive grazing practices (e.g. water hauling, fencing, and water development); or no changes in grazing management practices.

Renewable Energy. Under the Proposed RMP, development of renewable energy would be allowed, with the possibility that such development may, to a limited degree, conflict with current livestock grazing. These conflicts may include removal of specific facility areas from grazing, construction of access roads and utility rights-of-way, and increased vehicle traffic in remote areas. Although some surface disturbances and vegetation removal may result from renewable energy development (up to 4,000 acres for wind energy), such disturbances generally would be limited in magnitude and extent. Thus, the impacts to livestock grazing from such development are expected to be inconsequential. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS (Appendix F, Section 3).

Travel Management and Off-highway Vehicle Use. Off-highway vehicle use would be limited to designated roads and trails as determined through a subsequent public process and area-specific analysis.

Transportation plans for the planning area would be updated and unnecessary roads may be closed and rehabilitated. The reduction of areas open to cross-country off-highway vehicle use would result in substantially fewer conflicts with livestock grazing than under current management. The off-highway vehicle designations and travel management provisions of the Proposed RMP would require permittees to have a special stipulation in their permit to allow cross country motorized travel. This could have a greater effect on the level of effort required by permittees for daily operations than under current management.

Recreation. Increasing recreational demand would continue to create new conflicts with livestock grazing, particularly in the southern portion of the planning area where the greatest recreational demand is expected to occur. Under the Proposed RMP, five special recreation management areas totaling approximately 1.2 million acres would be established in the decision area. With continued grazing in these areas and increased recreational use of the same areas, increased conflicts between recreation and livestock grazing are expected to occur.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (see Section 4.18), would be distributed throughout the 11.5 million acres of the planning area. The impact to livestock from minerals development could involve temporary removal of vegetation and short-term limitation of grazing. Reclamation would restore vegetation in most cases, but there could be some irretrievable loss of range land or a change in vegetation communities. Site-specific analysis and best management practices would provide further mitigation and protection of range sites.

Watershed Management. Any additional forage produced beyond meeting rangeland health standards as a result of fire rehabilitation or other vegetation manipulation would be allocated to livestock and wild horses, watershed maintenance, and reserved for wildlife on a balanced basis. The level of additional forage resulting from vegetation treatments under the Proposed RMP is expected to be of a magnitude that would largely offset potential reductions in livestock numbers during the treatment process.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available) and other tools would be used to the greatest extent practical under the Proposed RMP. Short-term livestock grazing use on treatment areas would be temporarily displaced during treatment recovery and emergency stabilization and rehabilitation efforts. Long-term livestock grazing opportunities would improve in the treatment areas. Restoration of vegetation resilience and return to historical fire regimes would reduce future impacts to livestock grazing when wildland fires occur.

Noxious and Invasive Weed Management. The spread of noxious and invasive weeds into grazing allotments could result in the temporary closure of affected grazing lands in order to expedite treatment and eradication measures. Livestock grazing may be used to reduce noxious weed infestations and their impacts.

Special Designations. Livestock grazing would be unavailable on approximately 203,670 acres in five ACECs including the three desert tortoise ACECs. Grazing would be restricted in a variety of the other proposed ACECs through grazing permit terms and conditions. These restrictions are expected to have minimal effects on grazing operations.

Conclusion. Approximately 11.3 million acres would remain available for grazing following closures on all or portions of five ACECs. Approximately 424,602 animal unit months on 8.4 million acres would be authorized on grazing allotments that have been determined to be meeting or progressing toward achievement of standards for rangeland health. Approximately 120,665 animal unit months on 3.2 million acres would be authorized on grazing allotments pending their evaluation for meeting rangeland health standards. The total acreage available for grazing is subject to change based on approximately 75,600 acres identified for potential sale. Although portions of these lands may continue to be grazed after they are sold, they would no longer be administered as part of the BLM livestock grazing program. Vegetation treatments and protection of freshly seeded areas also could temporarily affect grazing on substantial areas during the treatment process, but it is expected that increased forage production on previously treated areas would offset temporary reductions in those allotments. The Proposed RMP would achieve the stated goal for this program.

Alternative A

Allotment evaluations are being completed primarily in conjunction with grazing term permit renewal and the watershed analysis process. Allotment evaluations and watershed assessments are being conducted to determine if the standards and fundamentals for rangeland health are being achieved. A determination also is made as to whether livestock grazing is maintaining or progressing toward the achievement of standards for rangeland health and if livestock grazing is a significant factor in failing to achieve the standards. Standards and guidelines developed for the planning area include the Northeastern Great Basin Area and the Mojave-Southern Great Basin Area. Standards and guidelines would be implemented through terms and conditions of grazing permits, leases and annual authorizations.

Impacts from Livestock Grazing Management Actions. Grazing allotment allocation would be the same as the Proposed RMP.

Approximately 5,658 animal unit months on 203,670 acres (2 percent of the Ely planning area) will remain unavailable for livestock grazing in the Mormon Mesa, Kane Springs, and Beaver Dam Slope ACECs and associated grazing allotments (see **Map 2.4.16-1**). The continuance of managing the available forage in the ACECs will, in the long term, aid in the recovery of the desert tortoise.

Domestic sheep and goats would continue to be managed in accordance with current BLM policies for management of domestic sheep and goats in bighorn sheep habitat when proposed changes to BLM grazing permits are being considered.

Implementation of specific management actions on grazing allotments in desert tortoise habitat will aid in the recovery plan for desert tortoise. In the short term, restricting utilization limits on available forage in specific seasons of use will allow for more available forage for desert tortoise. Continued monitoring of desert tortoise habitat to ensure that a minimum of 15 percent canopy cover remains within each ecological site, adjustment of livestock stocking levels in the event of unusual climatic conditions, and removal of livestock for areas unavailable to livestock grazing will, in the long term, improve habitat for desert tortoise.

Impacts from Other Programs. Impacts to livestock grazing from the renewable energy program and noxious and invasive weed management would be the same as described for the Proposed RMP.

Vegetation. Vegetation restoration or watershed treatment activities are expected to continue at the same levels as the present under Alternative A (i.e., approximately 10,000 acres per year based on a historical average). Since seedling establishment and soil stabilization period of at least 2 to 3 years is typically projected for seeding projects, such projects could result in an approximate 20,000 to 30,000-acre (minimum) temporary reduction in available forage at any given point in time until these areas can be safely grazed.

Special Status Species. The three desert tortoise ACECs (totaling 203,670 acres) would continue to be unavailable for livestock grazing, and livestock grazing management outside the ACECs would be similar to the Proposed RMP, except that the restricted period of activities would be 1 month shorter (March 15 to October 15 instead of March 1 to October 31). The Lower Meadow Valley Wash would remain available for livestock grazing. Thus, overall effects of special status species on livestock grazing would be less restrictive than under the Proposed RMP.

Wild Horses. Current competition between wild horses and livestock for forage likely would intensify with any additional deterioration of rangeland health and forage availability. This competition would be alleviated in those herd management areas where wild horse populations are reduced to and maintained at appropriate management levels.

Lands and Realty. To the extent that grazing allotments overlap with lands identified as available for possible disposal (31,900 acres identified for potential disposal under this alternative; see Section 2.4.12 for details), these allotments may be affected (modified or eliminated) by disposal, resulting in a reduction of lands available for grazing.

Travel Management and Off-highway Vehicle Use. The construction of new roads and trails would be relatively limited. Thus, new or additional conflicts between livestock grazing and road construction are expected to be few. However, since the majority of the planning area (about 9.8 million acres) would remain open to off-highway vehicle use and the demand is expected to grow substantially, conflicts with such traffic on existing trails are expected to occur at an ever increasing frequency. Off-highway vehicle traffic, when not using roads and trails, impacts vegetation growth, extent of vegetation cover, and erosion patterns, resulting in secondary impacts on livestock behavior and use patterns.

Recreation. Increasing recreational demand, especially for off road vehicle use, would create new conflicts with livestock grazing. This is especially true in the southern portion of the planning area, where population demographics suggest the greatest future recreational demand. One special recreation management area along Highway U.S. 50 of approximately 750,000 acres would remain in the decision area and would have minimal effects on grazing.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP (see Section 4.18). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Watershed Management. Any additional forage produced within the Schell Resource Area as a result of fire rehabilitation or other vegetation manipulation would be allocated at a ratio of 70 percent to livestock and wild horses and 30 percent reserved for wildlife. In the remainder of the planning area, additional or surplus forage would be allocated proportionately among all qualified users. The level of additional forage resulting from vegetation treatments under Alternative A is not expected to be of a magnitude that would result in noticeable changes in livestock numbers following such allocations.

Fire Management. The impacts under Alternative A would be similar to those under the Proposed RMP except on a smaller scale. This, in the long-term, would result in fewer acres with improved ecological health, vegetation resilience, and overall improved forage quality. Fuels would continue to accumulate in untreated areas, and the probability of major, uncontrollable, stand-replacing fire events would continue. This would result in greater areas being unavailable for livestock grazing during emergency stabilization and rehabilitation efforts.

Special Designations. No additional ACECs (beyond the three desert tortoise ACECs) or other special designations that would result in areas being unavailable for livestock grazing are proposed. As a result, there would be no additional impact to livestock grazing as a result of special designations management activities.

Conclusion. Approximately 11.3 million acres would remain open to grazing. Approximately 424,602 animal unit months on 8.4 million acres would be authorized on grazing allotments that have been determined to be meeting or progressing toward achievement of standards for rangeland health. Approximately 120,665 animal unit months on 3.2 million acres would be authorized on grazing allotments pending their evaluation for meeting rangeland health standards. Potential land disposals would affect total acreage available for grazing.

Alternative B

Impacts from Livestock Grazing Management Actions. Under Alternative B, livestock grazing would continue on approximately 7.7 million acres within the planning area (prior to potential land disposals). Livestock grazing would be authorized on those allotments that have been determined to be meeting the standards for rangeland health. Livestock grazing also would be authorized on allotments pending their evaluation for meeting the standards. The authorization of additional possible land disposal under this alternative may result in the modification or elimination of individual allotments. In addition to those areas previously unavailable for grazing under the Desert Tortoise Amendment to the Caliente MFP, this alternative would render unavailable to grazing the remaining desert tortoise habitat within the Mojave Desert (approximately 523,900 acres), approximately 3.0 million acres of bighorn sheep habitat, and 14,900 acres within new ACECs. These actions would affect a total of 189 of the 234 existing allotments (see **Map 2.4.16-1**).

The non-use relinquished permits could be used for such purposes as establishing forage reserves or providing improved watershed protection. In comparison to Alternative A, this approach would provide: 1) greater flexibility for allocation of increased forage resulting from watershed treatments; 2) a shift toward managing on a watershed rather than an allotment basis; and 3) greater flexibility of management toward achievement of the Resource Advisory Council standards and guidelines (Appendix B).

Additional forage available on treated areas would not be allocated to livestock or reserved for wildlife. Alternately, the additional forage production would contribute toward meeting watershed goals and rangeland health standards.

Impacts from Other Programs. Livestock grazing impacts associated with vegetation, wild horses, renewable energy, travel management and off-highway vehicle use, geology and mineral extraction, fire management, noxious and invasive weed management, and special designations would be the same as described for the Proposed RMP. The following programs would have different impacts on the livestock grazing program in comparison to the Proposed RMP.

Special Status Species. Livestock grazing would be unavailable in the Kane Springs, Mormon Mesa, and Beaver Dam Slope desert tortoise ACECs, and all desert tortoise habitats outside the desert tortoise ACECs (see **Table 4.16-1**) for a total of approximately 727,600 acres removed from grazing for special status species protection.

Lands and Realty. Under Alternative B, approximately 90,600 acres would be available for possible disposal (see Section 2.6.12 for details). Adjustment or elimination of affected livestock grazing allotments would occur if and when these lands are sold. Impacts from land disposal would be long term or permanent.

Recreation. Escalating recreational demand would continue to create new conflicts with livestock grazing, particularly in the southern portion of the planning area where the greatest future recreational demand is expected to occur. Under Alternative B, nine special recreation management areas totaling approximately 2.7 million acres would be established in the decision area. While management of these areas would not preclude grazing, the conflicts between grazing use and recreation are expected to increase on and around these areas.

Watershed Management. Any additional forage produced beyond meeting rangeland health standards as a result of fire rehabilitation or other vegetation manipulation would be reserved for watershed maintenance and wildlife, not allocated to livestock.

Conclusion. Approximately 3.8 million acres of additional grazing area affecting 189 total allotments would be unavailable for grazing due to desert tortoise habitat, bighorn sheep habitat, acquisition of former U.S. Forest Service allotments that are currently unavailable for grazing, and new ACECs (beyond the 203,670 acres already unavailable in the existing desert tortoise ACECs) resulting in long-term impacts to livestock grazing. Livestock grazing would be authorized on those allotments that have been determined to be meeting the standards for rangeland health. Livestock grazing also would be authorized on allotments pending their evaluation for meeting the standards. Vegetation treatments and protection of freshly seeded areas also could temporarily affect grazing on substantial areas during the treatment process causing short-term impacts. It is expected, however, that increased forage production on previously treated areas would offset temporary reductions in these allotments. Because this alternative would effectively render one-third of the planning area unavailable for livestock grazing, it is questionable as to whether the alternative could be considered as meeting the program goal, even though the goal would be met on the remainder of the area.

Alternative C

Impacts from Livestock Grazing Management Actions. Areas available for grazing under Alternative C would be the same as Alternative A except that 6,400 additional acres would be unavailable for grazing in four new ACECs. The authorization of additional possible land disposals under this alternative totaling approximately 295,200 acres (see Section 2.7.12 for details) may result in modification or elimination of allotments if and when these lands are sold.

The authorization of 545,267 animal unit months on 11.3 million acres within the Ely planning area is expected to meet the RMP goals and objectives. Grazing allotment allocation would be the same as the Proposed RMP.

Approximately 5,658 animal unit months on 203,670 acres (2 percent of the Ely planning area) will remain unavailable for livestock grazing in the Mormon Mesa, Kane Springs, and Beaver Dam Slope ACECs and associated grazing allotments (see **Map 2.4.16-1**). The continuance of managing the available forage in the ACECs will, in the long term, aid in the recovery of the desert tortoise.

Domestic sheep and goats would continue to be managed in accordance with current BLM policies for management of domestic sheep and goats in bighorn sheep habitat when propose changes to BLM grazing permits are being considered.

Implementation of specific management actions on grazing allotments in desert tortoise habitat will aid in the recovery plan for desert tortoise. In the short term, restricting utilization limits on available forage in specific seasons of use will allow for more available forage for desert tortoise. Continued monitoring of desert tortoise habitat to ensure that a minimum of 15 percent canopy cover remains within each ecological site, adjustment of livestock stocking levels in the event of unusual climatic conditions, and removal of livestock for areas unavailable to livestock grazing will, in the long term, improve habitat for desert tortoise.

Approximately 7,843 acres in the Haypress Allotment would be disposed of if Congressional direction is provided in the future.

Livestock grazing would not be eliminated from bighorn sheep ranges. Management in these areas would be the same as Alternative A. This approach would have little or no change in impacts to rangeland resources or the grazing permittees.

Alternative C would provide the flexibility for BLM to use relinquished permits for the creation of forage reserves available for research or temporary use by permittees who are displaced for any reason. The Tamberlaine Allotment, if relinquished, would be managed as a forage reserve. This alternative would generate positive benefits for other permittees within the planning area.

Impacts from Other Programs. Livestock grazing impacts associated with wild horses, renewable energy, geology and mineral extraction, noxious and invasive weed management, and special designations activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. Effects of vegetation treatments on livestock grazing would be essentially the same as the Proposed RMP during the period of treatment and restoration. After the first few years of treatments, however, the additional forage produced in these areas would be allocated to livestock (see watershed management) and could, at least partially, offset the reduction in available acreage. Thus, impacts from vegetation treatment would typically be short term on a given allotment.

As a result of vegetation treatments particularly in sagebrush, mountain shrub and mountain mahogany plant communities, short-term reductions in authorized livestock use, restriction or exclusion of livestock, changes in period of use, or other management actions may occur in order to implement restoration actions. Authorized use may increase following the restoration activity based on additional forage produced and achievement of rangeland health objectives. Restoration and maintenance of vegetation communities to achieve desired range of conditions and varying vegetation states or mosaics of the plant communities across the landscape would increase herbaceous production. Effects of vegetation treatments on livestock grazing also may be essentially the same as Alternative B following treatment. Management actions may be required prior to treatment in order to allow and promote treatment effects and restoration. These may include; changes in permitted use within the project area, restriction or exclusion of livestock or other management actions.

Treatment of pinyon-juniper woodlands and quaking aspen stands also may require adjustments to stocking levels, periods of use or other actions in order to implement actions necessary to maintain or improve pinyon-juniper woodlands and quaking aspen stands. Such impacts would typically be of short duration.

In those vegetation types (e.g., Mojave Desert, salt desert shrub, and riparian/wetland) where the vegetation treatments primarily would be passive in nature (i.e., biological treatments), livestock grazing would be adjusted if current management does not allow for the maintenance or measurable progress toward achieving the desired range of conditions. These impacts could be either short or long term depending on the situation involved.

Special Status Species. The three desert tortoise ACECs (totaling 203,670 acres) would continue to be unavailable for livestock grazing, and livestock grazing management outside the ACECs would be similar to the Proposed RMP, except that the restricted period of activities would be 1 month shorter (March 15 to October 15 instead of March 1 to October 31). Thus, overall effects of special status species on livestock grazing would be less restrictive than under the Proposed RMP within desert tortoise habitat outside the ACECs. Livestock grazing within the Lower Meadow Valley Wash ACEC would be the same as the Proposed RMP and would be controlled by terms and conditions and season of use restrictions on the grazing permits to avoid impacts during the nesting season to the Southwestern willow flycatcher and the yellow-billed cuckoo.

Lands and Realty. Under Alternative C, approximately 295,200 additional acres would be available for possible disposal. Adjustment or elimination of affected livestock grazing allotments would occur if and when these lands are sold. Such impacts would be long term or permanent in nature.

Travel Management and Off-highway Vehicle Use. Under Alternative C, approximately 730,000 acres of special recreation management areas would be identified for off-highway vehicle emphasis areas and 32,000 acres of dry lake beds would be open to cross-country off-highway vehicle use. The remainder either would be closed to off-highway vehicle use or limited to use only on designated roads and trails. The reduced area available for off-highway vehicle use under this alternative likely would result in fewer conflicts with livestock grazing than under Alternative A but more than under the Proposed RMP.

Recreation. Escalating recreational demand would continue to create new conflicts with livestock grazing, particularly in the southern portion of the planning area, where the greatest future recreational demand is expected to occur. Nine special recreation management areas totaling approximately 2.6 million acres would be established in the decision area. While management of these areas may not preclude grazing, the conflicts between grazing use and recreation are expected to increase on and around these areas.

Watershed Management. Any additional forage produced beyond meeting rangeland health standards as a result of fire rehabilitation or other vegetation manipulation would be allocated to livestock. The level of additional forage resulting from vegetation treatments under the Alternative C is expected to be of a magnitude that largely would offset potential reductions in livestock numbers during the treatment process.

Fire Management. Under Alternative C, full suppression of wildland fires would occur and, therefore, the initial affected area of interaction with livestock grazing would be less than or similar to the Proposed RMP and Alternative A. However, with continued fire management under this approach, it is expected that accumulation of heavy fuels in untreated areas would eventually lead to situations where suppression would become impractical, if not impossible, resulting in large-scale, intense fire events. Thus, on a long-term basis, fire impacts to livestock grazing would be greater than either the Proposed RMP or Alternative A.

Conclusion. Approximately 11.3 million acres would remain available for grazing in 234 existing allotments, subject to potential land sales of up to 295,200 acres. These areas would become unavailable for grazing when they are sold. Long-term fire impacts to grazing would be substantial. Vegetation treatments and protection of freshly seeded areas also could temporarily affect grazing on substantial areas during the treatment process, but it is expected that increased forage production on previously treated areas would offset temporary reductions in these allotments. Alternative C would achieve the goal for the livestock grazing program.

Alternative D

Under Alternative D, no livestock grazing would be permitted in the planning area. Therefore, livestock grazing per se would cease to impact or be impacted by other resource uses and users. The termination of livestock grazing, however, would generate substantial impacts to current allotment permittees and to revenues received by the BLM for grazing fees (addressed under Economic and Social Conditions). It also would affect numerous other resource programs. These effects are addressed in those various resource discussions.

Since this decision would not be consistent with current regulations and agency policy, selection of this alternative would require Congressional approval for implementation.

Conclusion. Elimination of the livestock grazing program within the planning area would constitute a major change in policy with attendant impacts to livestock grazing, other resource uses, and users. Since Alternative D does not provide for livestock grazing as a component of multiple use of the public lands, it would not achieve the stated goal for this program.

4.17 Forest/Woodland and Other Plant Products

Impact Issues

Forest/woodland and other plant products would be affected by activities that modify the quantity and quality of vegetation resources either directly or indirectly.

Assumptions for Analysis

- Forest/woodland and other plant products may originate from forest, woodland, or non-woodland plant communities. Demand for forest/woodland and other plant products are expected to increase as population increases.

General Impacts from Vegetation Treatment Tools and Techniques

Please refer to Section 4.5, Vegetation, for general impacts from vegetation tools and techniques. Tools and techniques that may positively or negatively affect availability of forest/woodland and other plant products include fire, mechanical and chemical treatments, and grazing management.

Interactions with Other Programs

The forest/woodland and other plant product management program within the planning area potentially would be affected by actions within the resource management programs for vegetation, lands and realty, renewable energy, travel management and off-highway vehicle use, fire management, and special designations.

Goal

Provide opportunities for traditional and non-traditional uses of vegetation products on a sustainable, multiple-use basis.

Objective

To make healthy forest/woodlands and populations of other plants available for the responsible harvesting of forest/woodland and other plant products by the public, commercial interests, and American Indians and allow access for traditional and non-traditional uses.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. After completion and approval of the RMP, during project implementation, additional mitigation

measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Forest/Woodland and Other Plant Products Management Actions.

Parameter – General Forest/Woodland and Other Plant Product Management

Prior to, and shortly after (up to nearly 5 years) vegetation treatments are implemented, approximately 3.7 million acres would be available for forest/woodland product use in the planning area. This includes approximately 2.8 million acres of pinyon-juniper woodland, approximately 1.2 million acres of pinyon-juniper vegetation currently occupying sagebrush ecological sites (see **Map 4.5-2**), and approximately 17,000 acres of high elevation conifers (e.g., white fir) and 2,100 acres of aspen. Based on these estimates, the following forest/woodland products would be available within the planning area:

- 11 to 22 million cords of fuelwood (average production – 3 to 6 cords per acre);
- 16.7 million Christmas trees (average production – 15 singleleaf pinyon trees per acre; singleleaf pinyon occur within approximately 30 percent of pinyon-juniper woodlands and within sagebrush areas invaded with pinyon and juniper);
- 56 to 111 million posts and poles (average production – 15 to 30 posts and poles per acre); and
- 167 to 333 million pounds of pinyon nuts (average production during favorable years – 150 to 300 pounds per acre).

Management actions of the Proposed RMP allow harvest of these products while protecting a variety of rare or unique species (e.g., bristlecone pine, limber pine, and swamp cedar). Harvest of desert vegetation (e.g., cactus and yucca) would be allowed primarily on a salvage basis subject to state law and Section 7 consultation with the U.S. Fish and Wildlife Service where appropriate, thus, preventing over-harvest of such species.

Parameter – Fuelwood Collection

The forest/woodland products program for this parameter would allow widespread collection of pinyon, juniper, and mountain mahogany. Additional species (e.g., aspen, ponderosa pine, and white fir) would be made available on a case-by-case basis for fuelwood. Greater availability of species would provide increased choices and encourage additional public use of forest and woodland species and products. The increased number of species available for harvest also would allow greater flexibility in using fuelwood harvest as at tool in the management of these additional forest/woodland communities. By allowing harvest of these additional species on a case-by-case basis, the BLM can control the level of harvest of these species to prevent undue damage to other resources in the harvest area.

Fuelwood cutting would be permitted anywhere within the planning area except in closed areas. This would continue to provide opportunities for personal and commercial use of the woodland/forest resource. Over the past 7 years, the Ely Field Office has issued fuelwood permits for an average of 1,875 cords per year with a high of 2,390 cords in 1998 to a low of 1,515 cords in 2000. Fuelwood cutting is generally conducted within short distances from roads. Allowing harvest of pinyon, juniper, and mountain mahogany across most of the planning area would assist in protecting watersheds and communities from wildland fire as most harvesting would be concentrated in those areas. Harvesting that occurs in areas away from the communities also would reduce fire potential for native vegetation communities. The greatest demands have been for pinyon pine and juniper. This harvest trend would cause tree densities to decrease more near roads that are in close proximity to communities. Tree densities away from roads would begin decreasing as available wood is harvested near roads. Based on the cords estimated in the planning area, the rate at which woodlands are reportedly increasing, and low public demand, this level of green tree fuelwood harvest appears to be more than sustainable, particularly for pinyon and juniper.

Parameter – Pinyon Pine Nut Harvesting

Management actions of the Proposed RMP would allow harvest of pinyon pine nuts for both individual and commercial use with limited changes from current policy. Harvestable pinyon pine nut production in the planning area commonly meets or exceeds harvest demand in favorable years, but this situation will likely change as demand continues to grow in future years. The proposed management actions specify designation of areas for harvest that provide adequate control of commercial harvest levels to ensure that adequate quantities of pinyon pine nuts remain following harvest to provide for wildlife usage and seedling recruitment.

Parameter – Christmas Tree Harvesting

The forest/woodland products program for this parameter would allow private and commercial harvest of pinyon and juniper throughout the planning area, private harvest of white fir throughout the planning area, and commercial harvest of white fir on a site-specific case-by-case basis to help meet vegetation management objectives. Availability of the additional species (white fir) would provide increased choices and encourage additional public use of forest and woodland species and products to achieve management objectives for forested stands. This flexibility would facilitate meeting vegetation objectives for plant communities. By limiting the commercial harvest of this additional species to selected areas, the BLM would have greater flexibility in the management of applicable forest/woodland communities.

Parameter – Post and Pole Harvesting

The forest/woodland products program for this parameter would be similar to current management except additional species (aspen, fir, spruce) would be made available for posts and poles on a case-by-case basis. Greater availability of species would provide increased choices and encourage additional public use of forest and woodland species and products. The availability of additional species for harvest would allow greater flexibility in the management of these forest/woodland communities to enhance understory regeneration and meet site-specific objectives.

Parameter – Seed Collection
Seed collection would be available for commercial purposes on a case-by-case basis. Commercial collection of seed is unlikely to occur at a substantial level under this alternative, because activities are limited to hand and limited mechanical collection only. Limiting seed collection to no more than 50 percent of the annual seed crop would ensure that an adequate quantity of seed remains for continued regeneration and recruitment of other plant species.

Parameter – Other Vegetation Products Collection
By allowing the harvest of other vegetation products (e.g., wildings and boughs) on a case-by-case basis with limited collection methods, the level of harvest would be controlled and undue damage to other resources in the harvest area would be prevented. Based on current and past use, availability of these products far exceeds demand.

Impacts from Other Programs.

Vegetation. Under the Proposed RMP, woodlands would be treated and managed to achieve the range of healthy conditions identified in Section 2.4.5. This management direction would allow for extensive reductions in tree densities, which would have potential for personal and commercial uses.

As noted in the vegetation section, approximately 2.8 million acres of pinyon-juniper woodlands would be identified for potential treatment. All of the estimated 1.2 million acres of sagebrush ecological sites invaded by pinyon-juniper would most likely be treated. Therefore, approximately 3.3 million acres (77 percent of 2.8 million treated acres of pinyon-juniper woodland and all of sagebrush invaded sites) would be identified for eventual treatment. Assuming treatment over a period of 50 to 100 years (extending well beyond the current planning period), this would allow for an average of 33,000 to 66,000 acres of pinyon-juniper vegetation to be treated annually. Based on annual treatment estimates, and production estimates as listed previously in this section, the following forest/woodland products would be available annually in treated areas:

- 110,000 to 440,000 cords of fuelwood;
- 167,000 to 334,000 Christmas trees;
- 0.5 to 2.2 million posts and poles; and
- 1.7 to 6.7 million pounds of pinyon nuts.

The above products would still be available for product use during the short term (approximately 5 years). Over the long term, production of pinyon nuts, Christmas trees and other products should increase in pinyon-juniper woodland sites as competition is removed and resilience is restored. Woodland product availability after treatments would still meet expected demand.

The removal of pinyon and juniper trees to meet landscape objectives potentially could affect their relative availability for public and commercial use in some areas. How much and what type would depend on many factors such as method of treatment and methods of slash disposal. Tree removal activities implemented in close proximity to roads and communities would provide increased slash and fuelwood for public use. Slash removal methods involving burning, chipping, or hauling could reduce woodland product availability depending on location. Where vegetation treatments are remote, forest product availability would be less affected. Management activities would include the treatment of approximately 2.8 million acres of pinyon-juniper woodland and maintenance of approximately 827,000 acres that are currently in desired states. General impacts of the vegetation management program to forest/woodland products would be to make quantities of products readily available to the public. On a long-term basis, the production of forest/woodland products from restored and resilient communities is expected to exceed current levels.

Lands and Realty. Approximately 75,600 acres would be designated for possible disposal, but less than 20 percent of this total is occupied by woodlands. These areas would remain available for public uses unless and until a site-specific land transaction is approved. Additional utility rights-of-way may provide additional public access into woodland areas. Land authorizations for rights-of-way and communication sites could provide potential salvage of cactus and yucca.

Renewable Energy. Areas that are developed for renewable energy (up to 40,000 acres for wind energy) may affect the availability of woodland and other vegetation products. Renewable energy development may provide access to new areas of product availability depending on site specific characteristics, type of technology, and the nature of the proposed development.

Travel and Off-highway Vehicle Use. Limiting off-highway vehicle travel to designated roads and trails on approximately 10.3 million acres through subsequent public planning would reduce access to forest/woodland and other plant products through cross-country off-highway travel. Reduced access would reduce the amount of harvesting in outlying areas and increase harvest along designated roads.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available), and other tools would be used to the greatest extent practical under the Proposed RMP. This analysis would likely reduce the amount of pinyon-juniper woodland and forest/woodland products provided from these areas over the long term. However, the availability of forest/woodland products from other pinyon-juniper woodlands within the planning area would continue to exceed the demand for forest/woodland products in the long term. The amount and diversity of seed available for collection would likely remain the same or slightly increase in the long term with the greater frequency and extent of fire. With the restoration of vegetation resilience and return to historical fire regimes and condition classes, impacts to woodland vegetation would be reduced when fires occur.

Special Designations. There is no fuelwood potential within 8 of the 20 proposed ACECs. The remaining 12 ACECs, encompassing a total of 84,400 acres, would be encouraged as open, limited, or closed for availability of forest/woodland and other plant products. Given the broad availability of these resources within the decision area, these restrictions should have minimal effects on the utilization of plant products.

Conclusion. The Proposed RMP would expand the number of species permitted for use as fuelwood, posts and poles, and Christmas trees, providing a greater opportunity for personal and commercial use and greater flexibility in the management of these woodland communities. The increased availability is not likely to affect the overall resource supply for any of the species involved. Availability of woodland biomass products would continue to exceed demand on both short and long term basis. Green biomass availability would be replaced with dead wood during treatments, but overall product availability would remain relatively constant. Christmas tree availability would likely be reduced as treatments are implemented in more productive sagebrush ecological sites. Pine nut production would be reduced during the short term after treatments, but should maintain or exceed current production rates in the long term as woodland sites are restored and become resilient. Forest/woodland and other plant product availability would be affected in high priority watershed areas prior to other watersheds. The harvest of forest/woodland products would continue to have minimal effects on the woodland communities involved. The management actions of the Proposed RMP would achieve the goal for this program.

Alternative A

Impacts from Forest/Woodland and Other Plant Products Management Actions.

Parameter – General Forest/Woodland and Other Plant Product Management

Approximately 5.0 million acres would be available for forest/woodland product use in the planning area, of which approximately 3.6 million acres is pinyon-juniper woodland and 1.2 million acres is pinyon-juniper vegetation that has invaded into low elevation sagebrush communities. Rowland et al. (2003) estimated that approximately 35 percent of the sagebrush communities in the planning area are at moderate or high risk for replacement by pinyon-juniper woodlands. Based on these estimates as discussed in detail in Section 3.17.1, the following forest/woodland products would be available within the planning area:

- 15 to 30 million cords of fuelwood (average production – 3 to 6 cords per acre);
- 23 million Christmas trees (based on 15 trees per acre and singleleaf pinyon occurring within 30 percent of the pinyon-juniper woodlands);
- 75 to 150 million posts and poles (average production – 15 to 30 posts and poles per acre); and
- 225 to 450 million pounds of pinyon nuts (average production during favorable years – 150 to 300 pounds per acre).

Management actions of Alternative A allow harvest of these products while protecting a variety of rare or unique species (e.g., bristlecone pine, limber pine, and swamp cedar). Cactus and succulent collection would continue to be allowed for personal use only, primarily on a salvage basis subject to state law and Section 7 consultation with the U.S. Fish and Wildlife Service where appropriate. The collection of these plants only during salvage opportunities is a conservative practice that contributes to the perpetuation of affected plant populations.

Parameter – Fuelwood Collection

Fuelwood cutting for live and dead pinyon, juniper, and mountain mahogany would be permitted anywhere within the planning area except in closed areas. This would continue to provide opportunities for personal and commercial use of the pinyon-juniper resource. The decision in 2000 to allow fuelwood harvest of live pinyon and juniper throughout the decision area facilitates ease of public harvest and has not led to major increases in overall harvest volumes. Harvesting has shifted from designated cutting areas to areas closer to communities, but harvest levels have been low compared to availability. Impacts associated with the decision to allow pinyon and juniper fuelwood harvest throughout the planning area (except in some areas) would be the same as the Proposed RMP. With designated fuelwood cutting areas, impacts are concentrated in specific areas. Allowing fuelwood harvest throughout the planning area has indirectly minimized impacts within previously designated areas by reducing harvest activities in these areas. Since harvest levels have not increased after the 2000 decision, impacts from fuelwood harvest are expected to be less in previously designated areas as harvest will be spread throughout the planning area. Impacts within the planning area are expected to be minimal based on current and future demand. Over the past 7 years, the Ely Field Office has issued fuelwood permits for an average of 1,875 cords per year with a high of 2,390 cords in 1998 to a low of 1,515 cords in 2000. Fuelwood cutting is generally conducted within short distances from roads, and the greatest demands have been for pinyon pine and juniper. By increasing public access to the fuelwood resources, it is anticipated that hazardous fuels would be reduced around communities, increasing protection for the communities. Based on the cords estimated in the planning area, the rate at which woodlands are reportedly increasing, and low public demand, the current level of green tree fuelwood harvest appears to be more than sustainable.

Parameter – Pinyon Pine Nut Harvesting

Permit sales over the past 7 years for pinyon nuts ranged from 0 pounds in 2000 and 2003 to 26,000 pounds in 2002. Level of production varies widely from year-to-year based on precipitation, fires, insects, and other factors. In high production years demand may not reach supply, while in low production years the available supply may not satisfy the demand. By regulating the availability of commercial harvest contracts, the BLM can ensure that in favorable years an adequate seed supply remains following harvest to provide for wildlife and woodland regeneration.

Parameter – Christmas Tree Harvesting

Permit sales over the past 7 years included Christmas trees ranging from 540 trees in 2004 to 4918 trees in 1999. This level of pinyon and juniper harvest is sustainable with the production level of such trees within the planning area. Identification of designated areas for commercial harvest allow the BLM to use such harvest as a management tool in the vegetation treatment of these communities.

Parameter – Post and Pole Harvesting

Permit sales the past 7 years for posts ranged from 1500 posts in 2002 to 3118 posts in 1998. This level of harvest is sustainable with the production level of such trees within the planning area.

Parameter – Seed Collection

Seed collection would be available for commercial purposes on a case-by-case basis. Commercial collection of seed is unlikely to occur at a substantial level under this alternative, because activities are limited to hand and limited mechanical collection only.

Parameter – Other Vegetation Products Collection
By allowing the harvest of other vegetation products (e.g., wildings and boughs) on a case-by-case basis with limited collection methods, the level of harvest would be controlled and undue damage to other resources in the harvest area would be prevented. Based on current and past use, availability of these products far exceeds demand.

Impacts from Other Programs.

Vegetation. Pinyon and juniper management in sagebrush communities tends to involve removal of young, small trees with a low volume of wood products. Where these trees are mature with closed canopy in sagebrush communities, thresholds have been crossed that would make restoration costly and difficult.

The planning area has averaged about 10,000 acres per year of fire rehabilitation and other vegetation treatments including aerial seeding. Continued removal of pinyon and juniper trees at the current rate is unlikely to affect their relative availability for public and commercial use. Tree removal activities implemented in close proximity to roads and communities may provide increased slash for public use. Slash removal methods involving burning, chipping, or hauling could reduce woodland product availability depending on location. Where vegetation treatments are remote, forest product availability would be even less affected.

Management activities would include the treatment of approximately 1.1 million acres of pinyon-juniper woodland and maintenance of approximately 2.4 million acres that are currently in desired states. Impacts to pinyon-juniper woodlands from the vegetation treatments would be relatively limited in the short term (next decade) and would gradually increase as more areas are treated over the next 10 to 100 years. Treatment and maintenance activities within pinyon-juniper woodland would likely increase the availability of forest/woodland products, especially if areas are located within close proximity of existing roads. The availability of forest/woodland products from treated and maintained pinyon-juniper woodlands would continue to exceed the demand for forest/woodland products in the long term.

Lands and Realty. Lands currently designated for possible disposal are described in Section 2.5.12.2. Rights-of-way often go through woodlands in remote areas, but access to rights-of-way also can open up woodland access for public use. Approximately 31,900 acres would be available for possible disposal, but only a small portion of this is occupied by woodlands.

Renewable Energy. The impacts of providing opportunities for renewable energies would be the same or similar to those described for lands and realty program, namely creation of additional utility rights-of-way and access roads.

Travel Management and Off-highway Vehicle Use. The woodland and other vegetation products program is largely tied to and dependent upon the transportation system in the planning area. Approximately 9.8 million acres are open to off-highway vehicle use under current management. Current transportation planning accommodates public demand for products, as it is currently perceived. No permanent road closures are planned under Alternative A; although temporary closures could occur for construction, repair, or special events. User conflicts between woodland product activities, including pinyon pine nut collecting, and off-highway vehicle use or other recreation have not been identified, presumably due to the low level of public activity in the planning area. Forest/woodland and other plant products would still be available through off-road travel access.

Fire Management. Under Alternative A, prescribed fire, wildland fire use (approximately 3.6 million acres available) and other tools would not be used to the greatest extent practical as under the Proposed RMP. The impacts under Alternative A would be similar to those under the Proposed RMP except on a smaller scale. This, in the long-term, would result in fewer acres with improved ecological health, vegetation resilience, and overall improved habitat quality. Because fuels would continue to accumulate in untreated areas; the probability of major, uncontrollable, stand-replacing fire events would continue.

Special Designations. The three desert tortoise ACECs have no fuelwood resources and, therefore, would have no effect upon woodland product availability. Plant collecting is limited within these three areas and would preclude harvest of most, if not all, personal and commercial plant products within a total of 203,670 acres.

Conclusion. Current supplies of forest/woodland and other plant products including fuelwood, posts and poles, Christmas trees, pinyon pine nuts, various native seeds, and live plants of selected species for transplantation are adequate to meet existing demands. It is expected that availability of these forest/woodland products would continue to exceed the expected demand. Thus, this alternative would meet the program goal.

Alternative B

Impacts from Forest/Woodland and Other Plant Products Management Actions.

Parameter – General Forest/Woodland and Other Plant Product Management

Approximately 4.6 million acres would be available for forest/woodland product use in the planning area, including approximately 3.2 million acres of pinyon-juniper woodland and approximately 1.2 million acres of pinyon-juniper vegetation that has invaded into low elevation sagebrush communities (see **Map 4.5-2**). The majority of treatment within pinyon-juniper woodland would occur in the overmature sites where canopy cover would be reduced from an average of approximately 40 percent to an average of approximately 20 to 40 percent. In addition, approximately 4,200 acres of aspen communities (Forestland Ecological Site Description – 28BY055) would be available for fuelwood collection. Fuelwood collection within aspen communities would continue to occur and would be used as a tool for overall management and regeneration of aspen stands in the planning area. Based on these estimates, the following forest/woodland products would be available within the planning area:

- 14 to 28 million cords of fuelwood (average production – 3 to 6 cords per acre);
- 21 million Christmas trees (average production – 15 singleleaf pinyon trees per acre; singleleaf pinyon occur within 30 percent of the pinyon-juniper woodlands);

- 69 to 138 million posts and poles (average production – 15 to 30 posts and poles per acre);
- 210 to 400 million pounds of pinyon nuts (average production during favorable years – 150 to 300 pounds per acre); and
- 21,000 to 84,000 cords of aspen fuelwood (average production – 5 to 20 cords per acre).

Management actions of Alternative B allow harvest of these products while protecting a variety of rare or unique species (e.g., bristlecone pine, limber pine, and swamp cedar). Harvest of desert vegetation (e.g., cactus and yucca) would be allowed primarily on a salvage basis subject to state law and Section 7 consultation with the U.S. Fish and Wildlife Service where appropriate, thus, preventing over-harvest of such species.

Parameter – Fuelwood Collection

The forest/woodland products program for this parameter would be similar to the Proposed RMP except additional species (Gambel's oak and spruce) would be made available for fuelwood as well as aspen, ponderosa pine, white fir, pinyon, juniper, and mountain mahogany. Greater availability of species would provide increased choices and encourage additional public use of forest and woodland species and products. However, fuelwood collection would only be allowed in designated areas. This constraint, coupled with the increased number of species available for harvest, would allow greater flexibility in using fuelwood harvest as at tool in the management of these forest/woodland communities. By allowing harvest of live trees of the additional species, beyond those allowed in current management, on a case-by-case basis, the BLM can control the level of harvest of these species to prevent undue damage to other resources in the harvest area.

Parameter – Pinyon Pine Nut Harvesting

Management actions of Alternative B would allow harvest of pinyon pine nuts for both individual and commercial use with limited changes from current policy. Harvestable pinyon pine nut production in the planning area commonly meets or exceeds harvest demand in favorable years, but this situation will likely change as demand continues to grow in future years. The proposed management actions specify designation of acres for harvest that provide adequate control of commercial harvest levels to ensure that adequate quantities of pinyon pine nuts remain following harvest to provide for wildlife usage plus seedling recruitment.

Parameter – Christmas Tree Harvesting

The forest/woodland products program for this parameter would allow private and commercial harvest of pinyon and juniper throughout the planning area, private harvest of white fir throughout the planning area, and commercial harvest of white fir on a site-specific case-by-case basis to help meet vegetation management objectives. Availability of the additional species (white fir) would provide increased choices and encourage additional public use of forest and woodland species and products to achieve management objectives based on watershed analyses. By limiting the commercial harvest of this additional species to selected areas, the BLM would have greater flexibility in the management of applicable forest/woodland communities.

Parameter – Post and Pole Harvesting

The forest/woodland products program for this parameter would be similar to current management except additional species (aspen, fir, spruce) would be made available for posts and poles on a case-by-case basis. Greater availability of species would provide increased choices and encourage additional public use of forest and woodland species and products. The availability of additional species for harvest would allow greater flexibility in the management of these forest/woodland communities to enhance understory regeneration.

Parameter – Seed Collection

Alternative B would permit flexibility in the use of mechanical methods for commercial seed harvesting, which would increase the availability of seed for collection over the current policy. Mechanical harvest of seed would be permitted for personal and commercial purposes where compatible with watershed and plant community objectives, potentially making seed resources widely available. This is unlikely to occur on a large-scale based on the existing levels of livestock grazing that occur throughout the planning area precluding seed production on herbaceous grasses and forbs in large areas. For herbaceous plants, there also is unlikely to be large-scale opportunity because of the small stands to harvest from in most areas. Where shrubs such as mountain mahogany are dense, commercial harvest opportunities could be substantial.

The restriction on seed collection in restoration areas would help ensure adequacy of seed supplies for regeneration of desirable species. Limiting seed collection to no more than fifty percent of the annual seed crop would ensure that an adequate quantity of seed remains for continued regeneration and recruitment of other plant species.

Parameter – Other Vegetation Products Collection

By allowing the harvest of other vegetation products (e.g., wildings and boughs) on a case-by-case basis with limited collection methods, the level of harvest would be controlled and undue damage to other resources in the harvest area would be prevented. Based on current and past use, availability of these products far exceeds demand.

Impacts from Other Programs. Impacts to forest/woodland and other plant products associated with vegetation, renewable energy, and fire management activities would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Lands and Realty. Impacts would be the same as the Proposed RMP except approximately 90,600 acres would be designated for possible disposal, but less than 20 percent of this total is occupied by woodlands. These areas would remain available for public uses unless and until a site-specific land transaction is approved.

Travel and Off-highway Vehicle Use. Cross-country off-highway vehicle use would not be allowed and 844,000 acres of the planning area would be designated as off-highway vehicle emphasis areas. The combination of these classifications would reduce the availability of forest/woodland and other plant products.

Special Designations. There is no fuelwood potential within the three existing ACECs established in Lincoln County. The designation of 15 additional ACECs totaling approximately 134,350 acres would not affect the availability of forest/woodland and other plant products.

Conclusion. Alternative B would expand the number of species permitted for use as fuelwood, posts and poles, and Christmas trees, providing a wider opportunity for personal and commercial use. The increased availability is not likely to affect the overall resource supply for any of the species involved. Availability of forest/woodland products would exceed the expected demand. On a long-term basis, the production of forest/woodland products from restored and resilient communities is expected to exceed current levels. This alternative would achieve the program goal.

Alternative C

Impacts from Forest/Woodland and Other Plant Products Management Actions.

Parameter – General Forest/Woodland and Other Plant Product Management

Approximately 3.4 million acres would be available for woodland product use in the planning area, including approximately 3.0 million acres of pinyon-juniper woodland and approximately 1.2 million acres of pinyon-juniper vegetation that has invaded into low elevation sagebrush communities. In addition, approximately 2,800 acres of aspen and 11,200 acres of high elevation conifer communities (Forestland Ecological Site Description – 28BY063) would be available for fuelwood collection. Based on these estimates, the following forest/woodland products would be available within the planning area:

- 11 to 20 million cords of fuelwood (average production – 3 to 6 cords per acre);
- 15 million Christmas trees (average production – 15 singleleaf pinyon trees per acre; singleleaf pinyon occur within 30 percent of the pinyon-juniper woodlands);
- 51 to 102 million posts and poles (average production – 15 to 30 posts and poles per acre);
- 153 to 306 million pounds of pinyon nuts (average production during favorable years – 150 to 300 pounds per acre);
- 14,000 to 56,000 cords of aspen fuelwood (average production – 5 to 20 cords per acre); and
- 448,000 to 560,000 cords of white and limber pine fuelwood (average production – 40 to 50 cords per acre).

Management actions of Alternative B allow harvest of these products while protecting a variety of rare or unique species (e.g., bristlecone pine, limber pine, and swamp cedar). Harvest of desert vegetation (e.g., cactus and yucca) would be allowed primarily on a salvage basis subject to state law and Section 7 consultation with the U.S. Fish and Wildlife Service where appropriate, thus, preventing over-harvest of such species.

Parameter – Fuelwood Collection

The forest/woodland products program for this parameter would be similar to current management except additional species (e.g., aspen, Gambel's oak, ponderosa pine, spruce, and white fir) would be made available as well as pinyon, juniper, and mountain mahogany throughout the planning area except in closed areas. Greater availability of species would provide increased choices and encourage additional public use of forest and woodland species and products. This management approach would encourage demand for a variety of species that are not currently harvested for fuelwood. The increased number of species available for harvest also would allow greater flexibility in using fuelwood harvest as a tool in the management of these additional forest/woodland communities.

This management approach would provide opportunities for personal and commercial use of the most woodland/forest resources. Over the past 7 years, the Ely Field Office has issued fuelwood permits for an average of 1,875 cords per year with a high of 2,390 cords in 1998 to a low of 1,515 cords in 2000. Fuelwood cutting is generally restricted to short distances from roads, and the greatest demand has been for pinyon pine and juniper. Based on the cords estimated in the planning area, the rate at which woodlands are reportedly increasing, and low public demand, this level of green tree fuelwood harvest appears to be more than sustainable, particularly for pinyon and juniper.

Parameter – Pinyon Pine Nut Harvesting

Level of production varies widely from year-to-year based on precipitation, fires, insects, and other factors. In high production years demand may not reach supply, while in low production years the available supply may not satisfy the demand. By allowing mechanical harvest, the Ely Field Office can enable greater use of the available resource in years of high productivity. By regulating the availability of commercial harvest contracts, the BLM can ensure that in favorable years an adequate seed supply remains following harvest to provide for wildlife and woodland regeneration.

Parameter – Christmas Tree Harvesting

The forest/woodland products program for this parameter would be similar to current management except two additional species (spruce and white fir) would be made available for Christmas trees and both personal and commercial harvest would be allowed throughout the planning area. Availability of these additional species would provide increased choices and encourage additional public use of forest and woodland species and products. The absence of designated commercial harvest locations, however, would reduce the management utility of such harvests in relation to desired vegetation treatments.

Parameter – Post and Pole Harvesting

The forest/woodland products program for this parameter would be similar to current management except additional species (aspen, fir, spruce) would be made available for personal and commercial harvest of posts and poles throughout the planning area with emphasis on areas identified for disposal. Greater availability of species would provide increased choices and encourage additional public use of forest and woodland species and products. The availability of additional species for harvest would allow greater flexibility in the management of these forest/woodland communities to enhance understory regeneration.

Parameter – Seed Collection

Alternative C would permit flexibility in the use of mechanical methods for commercial seed harvesting, which would increase the opportunity for seed collection over the current policy. Mechanical harvest of seed would be permitted for personal and commercial purposes where compatible with watershed and plant community objectives, potentially making seed resources widely available. This is unlikely to occur on a large-scale based on the small stands and existing levels of livestock grazing that occur throughout the planning area precluding large quantities of seed production on herbaceous grasses and forbs in large areas. For herbaceous plants, there also is unlikely to be large-scale opportunity because of the small stands to harvest from in most areas. Where shrubs such as mountain mahogany are dense, commercial harvest opportunities could be substantial.

The restriction on seed collection in restoration areas would help ensure adequacy of seed supplies for regeneration of desirable species. Limiting seed collection to no more than fifty percent of the annual seed crop would ensure that an adequate quantity of seed remains for continued regeneration and recruitment of other plant species.

Parameter – Other Vegetation Products Collection

By allowing commercial harvest of other vegetation products (e.g., wildings and boughs) throughout the planning area with limited collection methods, it is expected that the level of harvest would increase, but undue damage to other resources in the harvest area would be prevented. Based on current and past use, availability of these products far exceeds demand.

Other Programs Impacts. Impacts to forest/woodland and other plant products associated with vegetation, renewable energy, and special designations management activities would be the same as or similar to those described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Lands and Realty. Impacts would be the same as the Proposed RMP, except that approximately 295,200 acres would be designated for possible disposal. Of these, less than 20 percent would be woodland.

Travel and Off-highway Vehicle Use. Impacts would be similar to those described for the Proposed RMP, except that approximately 1.1 million acres would be designated as off-highway vehicle emphasis areas. Implementation of Alternative C would greatly reduce the area open to off-road activities from the current management situation. This would not be consistent with allowing fuelwood to be collected throughout the decision area because only the fuelwood within extremely short distances of roads would be accessible.

Fire Management. The suppression of fire would increase the availability of pinyon-juniper woodland for woodland product harvesting in the short term and in the long term until these areas burn. However, the long-term increase in natural fuels would increase the probability of widespread wildland fires within the planning area, which may ultimately reduce the availability of pinyon-juniper woodland for woodland product harvesting.

Conclusion. Alternative C would expand the number of species permitted for use as fuelwood, posts and poles, and Christmas trees and areas in which these products could be collected, thus, providing a greater opportunity for personal and commercial use. The increased availability is not likely to affect the overall resource supply for any of the species involved. Availability of forest/woodland products would exceed the expected demand until major fires eliminated large blocks of pinyon-juniper woodlands. This alternative would achieve the program goal in the short-term, but may fail to achieve sustainability over the long term.

Alternative D

Impacts from Forest/Woodland and Other Plant Products Management Actions.

Parameter – General Forest/Woodland and Other Plant Product Management
Program-specific management activities would not allow the consumptive harvest of woodland/forest and other plant products, except for pinyon nut harvesting for personal use (including American Indians) and hand collection of seeds for personal use. Thus, the supply of forest/woodland and other plant products would increase over the long term. However, the majority of these products would not be available for public use.

Parameter – Fuelwood Collection
No fuelwood harvest would be allowed; therefore, there would be no impacts from such collection.

Parameter – Pinyon Pine Nut Harvesting
Only hand collection of pinyon pine nuts for personal consumption would be allowed, thus, impacts would be inconsequential.

Parameter – Christmas Tree Harvesting
No Christmas tree harvest would be allowed; therefore, there would be no impacts from such activities.

Parameter – Post and Pole Harvesting
No post and pole harvest would be allowed; therefore, there would be no impacts from such activities.

Parameter – Seed Collection
Only hand collection of seed for personal use would be allowed, thus, impacts would be inconsequential.

Parameter – Other Vegetation Products Collection
No collection of other vegetation products would be allowed; therefore, there would be no impacts from such activities.

Impacts from Other Programs. Impacts to forest/woodland and other plant products associated with vegetation, lands and realty, renewable energy, and special designations management activities would be the same as or similar to those described for Alternative A.

Travel Management and Off-highway Vehicle Use. Under Alternative D, off-highway vehicle use would be restricted to maintained roads and trails. This would be a substantial reduction in area open to such use as compared to the other alternatives. This constraint would impose limitations on the areas accessible for woodland product harvest.

Fire Management. Fire management under Alternative D would involve minimal suppression activities. This, coupled with the likely increase in invasive species and current presence of overmature pinyon-juniper woodlands would result in a high risk of catastrophic fire events that would remove considerable acreages of woodlands and result in conversion of these areas to the herbaceous state. With the increase of annual grasses and weeds, fire occurrence would increase, and the reestablishment of forest/woodland and other plant species would be hindered.

Conclusion. It is highly probably that major fires at an early date under this alternative would substantially reduce the long-term supply of forest/woodland products. The harvest constraints under Alternative D would fail to provide the desired opportunities for traditional and non-traditional use of the resource outlined in the program goal.

4.18 Geology and Mineral Extraction

Geological resources are either managed under special designations for unique geological features (see Section 4.22, Special Designations) or under mineral development, as discussed in this section. Impacts to the minerals program are the result of management actions that limit the availability of lands for minerals development or involve restrictions on land use and activities. These impacts vary depending on the type of minerals that would be developed. For leasable minerals, lands may be closed to leasing as well as several categories of restrictions for lands open to leasing. For locatable and mineral materials, management actions by other resource programs would result in either lands being open or proposed for withdrawal from mineral development. Mineral materials (salable minerals) are discretionary and subject to denial of the action where there are unavoidable resource concerns. All mineral actions are subject to mitigation measures to prevent unnecessary and undue degradation of public lands.

Oil/Gas Drilling
Photo by Mark Barber

The reasonable foreseeable development scenarios for individual categories of minerals are summarized in **Table 4.18-1** with more detailed explanation in the following text sections.

Table 4.18-1
Summary of Anticipated Disturbance from Mineral Extraction

Type of Mineral Development	Approximate Disturbance Acreage (Short-term)	(Long-term)
Fluid Leasable Minerals	8,400	1,400
Solid Leasable Minerals	0	0
Geothermal Development	200	100
Locatable Minerals	7,500	7,500
Mineral Materials	1,000	1,000
Totals Disturbance Acreage	**17,100**	**10,000**

Impact Issues

Fluid Leasable Minerals. The impact issues for fluid minerals result from the management actions for the protection of other resources. There are several categories of restrictions on fluid minerals that are a consequence of protecting those other resources. The categories include: 1) areas open to leasing, subject to standard lease terms and conditions; 2) areas open to leasing, subject to moderate constraints; 3) areas open to leasing, subject to major constraints such as no surface occupancy; and 4) areas closed to leasing.

The levels of restrictions from "open subject to standard lease terms and conditions" to "closed" have varying levels of impacts on the exploration and development of fluid minerals. The standard lease terms and conditions are provided in Section 6 of BLM's fluid mineral lease form. Stipulations also are attached to the lease form for those areas that have restrictions. Detailed discussions regarding restrictions and closures proposed for each alternative are presented in Chapter 2.0. All fluid mineral developments would be governed by the best management practices contained in the Gold Book: Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (U.S. Department of the Interior and the U.S. Department of Agriculture 2006). Prior best management practices specific to the Ely Field Office also would be retained and those are included in the Geology and Mineral Extraction section in Appendix F, Section 1. Geophysical exploration operations also would be conducted under the best management practices of the Gold Book and prior best management practices; however, such operations may have additional proposed requirements depending on the alternative as described in Sections 2.4.18, 2.5.18, 2.6.18, 2.7.18, and 2.8.18, Geology and Mineral Extraction.

The restrictions placed on fluid mineral development to protect other resources can affect the ability to develop the mineral resources. Lands open to leasing under standard terms and conditions would represent impacts of little consequence to fluid minerals. Closure of lands to leasing, no surface occupancy designations, and overlapping timing restrictions, however, could result in the loss of the fluid mineral resource, employment opportunities, revenue from production royalties, and taxes.

The lease stipulations have been developed to provide protection for a number of resources such as cultural resources, lands and realty, paleontological resources, recreation, special status species, visual resources, and wildlife resources. The requirements of the stipulations can include restrictions on seasonal access, designation of buffers around sensitive areas, or other mitigations that would be critical to protecting a particular resource.

The Ely Field Office has strived to use the least restrictive constraint to meet the resource protection objective. For example, areas containing resources that require protection from all surface disturbance have generally been designated as no surface occupancy rather than closed. Large ACECs that would need protection through closure also would have their outer half mile designated as a no surface occupancy. The no surface occupancy zone would allow some exploration and production from beneath the protected surfaces through directional and extended reach drilling.

Some areas may be closed to fluid mineral leasing because of statutory requirements. For example, designated wilderness and wilderness study areas are closed to mineral entry. If a wilderness study area is designated as wilderness, then it would continue to be closed to mineral development. If it is dropped from consideration, it could be open to leasing. Others areas can be closed to fluid minerals leasing because of special designations, recreation areas, lands withdrawals, cultural resources, or as part of an ACEC.

Solid Leasable Minerals. The solid leasable category includes minerals such as coal, oil shale, phosphorus, sodium, and locatable minerals on acquired lands. The decision area has few if any commercially extractable solid leasable mineral resources. However, planning must consider possible leasing for each of the alternatives. The impact issues for solid leasable minerals result from the management actions for the protection of other resources that could result in the closure of lands available for solid leasable mineral leasing.

Locatable Minerals. The impact issues for locatable minerals are associated with the management actions for the protection of other resources, which could result in the proposed withdrawal of lands available for locatable mineral exploration and development. Other issues include restrictions governing locatable mineral exploration and development.

Mineral Materials. The impact issues for mineral materials are associated with the management actions for the protection of other resources that could result in administrative and discretionary closure of lands available for mineral materials exploration and development. Other impacts may result from restrictions governing mineral material exploration and development.

Assumptions for Analysis

Impacts are analyzed in this section on the basis of reasonable foreseeable development scenarios for each category of minerals. These development scenarios are applied in total in the least constraining alternative and scaled downward in other alternatives as various constraints limit the area of lands available for development in a particular mineral category.

Fluid Leasable Minerals. Fluid mineral development potential in the decision area is based on reasonable foreseeable development scenarios for oil and gas and geothermal energy and was developed in conformance with BLM Instruction Memorandum No. 2004-089 (BLM 2004b). This analysis is based largely on the reasonably foreseeable development scenarios presented in detail in the mineral report prepared for the RMP/EIS (ENSR 2004a). Various additional assumptions have been incorporated based on changes in the mineral markets in the recent past. The minerals report is available at the Ely Field Office. It is impossible to predict with certainty how resource development would occur in the future. The interaction of prices, markets, technology, and environmental concerns all play a role. The reasonable foreseeable development scenarios were developed based on past exploration activities and estimates of future exploration and development activity given the potential occurrence of the resources.

Reasonable Foreseeable Development Scenario – Oil and Gas. The following is a list of major assumptions upon which the reasonable foreseeable development scenario is based:

- There would be no major regulatory changes in federal or state statutes, regulations, policy, and guidance that govern the exploration and development of fluid minerals, including lease royalty provisions and lease rental fees.

- Oil prices would remain sufficiently high to stimulate continued exploration and drilling. Recent historic highs in the price of oil may stimulate exploration activity above levels of the recent past. It is possible that higher prices may persist for the next few years. The reasonable foreseeable development scenario (ENSR 2004a) is a planning tool that was developed to accommodate the maximum development that could reasonably be expected to occur. However, actual activity levels, as with prices, cannot be predicted with certainty.

- The amount of federal oil and gas acreage under lease in the decision area would range between 1.0 and 1.5 million acres. Increases in the lease inventory above 1.5 million acres would be driven by commodity prices and availability of land for leasing. As of January 2005, there were 459 federal oil and gas leases covering approximately 1.0 million acres in the decision area. In the next year or two, leases may increase to as much as 3 million acres. This would be due to the unprecedented spike in the price of oil, recent discoveries in similar geologic plays in other parts of the Great Basin, and the availability of additional lands for leasing that have not been available for several years due to the lack of appropriate NEPA analysis.

- Based on 2000 to 2004 numbers, additional federal lease sales are projected to average approximately 220,000 acres per year for the next several years. Due to the factors outlined above, lease sales could average as much as 400,000 acres per year within the next 1 to 2 years.

- It cannot be predicted at this time how much acreage eventually would be held by production, which is entirely dependent on the discovery of commercial oil and gas fields.

- Past oil and gas exploration has concentrated on oil plays within valley floors. New regional discoveries and a recent oil and gas resource assessment, however, indicate that a large amount of exploration could take place in the mountains (see **Map 4.18-1**) (U.S. Geological Survey 2005).

- Seismic surveys are a critical part of oil and gas exploration. If new discoveries are made or new plays are developed, seismic activity would increase. It is assumed that approximately 30 miles of seismic survey would be conducted per year, based on recent experience.

- New field discoveries would be similar in size and surface disturbance to the Trap Springs and Kate Springs oil fields within Railroad Valley.

- The reasonably foreseeable development scenario is made without respect to any existing or proposed leasing stipulations and conditions of approval in accordance with BLM guidance.

- Actual locations of potential exploration wells and field development are unknown. The impacts associated with these activities are likely to occur anywhere within the planning area that is of high or moderate, or even low, potential for oil and gas resources.

As shown on **Table 4.18-2**, a total of 448 wells would be drilled resulting in total short-term (5 to 10 years) disturbance of approximately 8,400 acres and a long-term (about 20 years for producing wells) disturbance of approximately 1,400 acres. Short-term disturbance as defined for the reasonably foreseeable development scenario includes locations for wells in the plugged and abandoned category that would be reclaimed immediately after drilling or construction.

Table 4.18-2
Summary of Surface Disturbance Resulting from Anticipated Oil and Gas Well Drilling Activity

Facility Type	Number or Facilities	Short-term Disturbance Factor[1]	Long-term Disturbance Factor[1]	Short-term[2] Disturbance (acres)	Long-term Disturbance (acres)
Seismic Survey	30 miles/yr	<2 acres/mile	0	<1,000	0
Exploratory Well Disturbance					
Exploratory well pads	200 wells	3.7 acres/well	1.5 acres/well	740	300
Exploratory well access roads	1,000 miles	4.8 acres/mile	2.9 acres/mile	4,800	290
Total Disturbance for Exploration Drilling				**5,600**	590
Small Field Development					
Active well pads[3]	40 wells	3.7 acres/well	1.5 acres/well	148	60
Abandoned well pads	48 wells	3.7 acres/well	0	178	0
Central processing facilities	4 facilities	5 acres/facility	5 acres/facility	20	20
Access roads	24 miles	6.3 acres/mile	4.4 acres/mile	151	106
Service roads	32 miles	4.8 acres/mile	2.9 acres/mile	154	93
Pipelines	8 miles	1.8	0	14	0
Gravel pits	4 pits	20 acres/pit	20 acres/pit	80	80
Total Disturbance, Development of Four Small Fields				745	359
Large Field Development					
Active well pads	100	3.7 acres/well	1.5 acres/well	370	150
Abandoned well pads	60	3.7 acres/well	0	222	0
Central processing facilities	4 facilities	5 acres/facility	5 acres/facility	20	20
Access roads	12 miles	6.3 acres/mile	4.4 acres/mile	76	53
Service roads	43 miles	4.8 acres/mile	2.9 acres/mile	206	125
Pipelines	10 miles	1.8 acres/mile	0 acre/mile	18	0
Gravel pits	2 pits	42 acres/pit	42 acres/pit	84	84
Total Disturbance, Development of Two Large Fields				996	432
Associated Facilities					
Refinery	1 Facility	20 acres/site	20 acres/site	20	20
Refinery pipeline	25 miles	1.8 acres/mile	0	45	0
Total Disturbance for Associated Facilities				65	20
Total Disturbance				8,406	1,401

[1] BLM 1992b and 1999b.

[2] Short-term applies to effects occurring in the immediate future and persisting for approximately 5 to 10 years or less; long-term applies to effects lasting or occurring beyond 10 years.

[3] Active wells include producers, injectors, and disposal wells.

Reasonable Foreseeable Development Scenario – Geothermal. The following is a list of major assumptions upon which the reasonable foreseeable development scenario for geothermal resources is based:

- There would be no major regulatory changes in federal or state statutes, regulations, policy, and guidance that govern the exploration and development of fluid minerals, including lease royalty provisions and lease rental fees.

- Geothermal development potential is moderate in the valley areas and low in the mountain areas (**Map 4.18-2**). The moderate potential areas cover about 49 percent of the decision area. **Table 4.18-3** summarizes the disturbances resulting from geothermal development.

Table 4.18-3
Summary of Surface Disturbance from Anticipated Geothermal Project Development

Types of Facilities	Number of Facilities	Short-term Disturbance Factor	Long-term Disturbance Factor	Short-term Disturbance[1] (acres)	Long-term Disturbance[1] (acres)
Geothermal gradient well pads	30 wells	0.07 acre/well	N/A	2	0
Gradient well access roads	5 miles	4.8 acres/mile	N/A	24	0
Exploratory well	1 well	3.7 acres/well	1.5	4	1
Exploratory well roads	5 miles	4.8 acres/mile	2.9 acres/mile	24	14
Development well pads	2 wells	3.7 acres/well	1.5 acres/well	7	3
Development well roads	6 miles	6.3 acres/mile	4.4 acres/mile	38	26
Power plant	1 plant plus ancillary facilities	40 acres/plant and facilities	40 acres/plant and facilities	40	40
Pipelines	8 miles	1.8 acres/miles	0	15	0
Electrical transmission lines	50 miles	1.0 acre/mile	1.0 acre/mile	50	50
Total				**204**	**134**

N/A – Not applicable.

[1] Short-term applies to effects occurring in the immediate future and persisting for approximately 5 to 10 years or less; long-term applies to effects lasting or occurring beyond 10 years.

- As of March 2004, the geothermal leasehold in the decision area is approximately 1,000 acres in a single lease. Geothermal leasing in the future is not expected to greatly increase in the short term, but potential exists for a variety of low-temperature geothermal uses.
- Very limited geothermal exploration and development are expected in the short term.
- If high-temperature geothermal resources are discovered, the reasonably foreseeable development scenario assumes the maximum development would consist of a power plant within a 10- to 15-megawatt generating capacity and associated greenhouse or dehydration facilities.
- Geothermal exploration could take 5 years, development could take 2 to 10 years, and production could last for 30 years.

Solid Leasable Minerals.

Reasonable Foreseeable Development Scenario. There would be no major regulatory changes in federal or state statutes, regulations, policy, and guidance that govern the exploration and development of solid leasable minerals. Although there is a small probability that such minerals are present in commercially exploitable deposits, the Ely Field Office would provide a program for the development of such commodities if solid leasable minerals are found to be commercially developable.

Locatable Minerals.

The following summarizes the locatable mineral development potential in the decision area based on reasonable foreseeable development scenarios for locatable minerals and were developed in conformance with applicable BLM policies. This analysis is presented in detail in the mineral potential report prepared for the RMP/EIS (ENSR 2004b). This document is available at the Ely Field Office. It is difficult to predict with certainty how resource development would occur in the future. The interaction of prices, markets, technology, and environmental concerns all play a role. The reasonable foreseeable development scenarios were developed based on past exploration activities and estimates of future exploration and development activity given the potential occurrence of the resources.

Reasonable Foreseeable Development Scenario. The following is a list of major assumptions from the reasonable foreseeable development scenario (ENSR 2004b) for locatable minerals resources:

- There would be no major regulatory changes in federal or state statutes, regulations, policy, or guidance that govern the exploration and development of locatable minerals.

- Recent historic highs in the price of metallic minerals may stimulate exploration activity above levels of the recent past. It is possible that higher prices may persist for the next few years. The reasonable foreseeable development scenario (ENSR 2004b) is a planning tool that was developed to accommodate the maximum development that could reasonably be expected to occur. However, actual activity levels, as with prices, cannot be predicted with certainty.

- Commodity prices in the future would provide sufficient economic incentive to support the production of locatable mineral commodities.

- Surface mining is expected to remain the primary method of locatable mineral resource extraction in the decision area. Underground methods would be used to mine deeper deposits.

- New ore bodies will continue to be developed to replace reserves as they are mined out. This would be accomplished through both the discovery and development of new mines and expansions of existing mines.

- It is anticipated that one large open-pit mine would be developed or undergo a major expansion during the next 20 years. A large open-pit mine often consists of either one large pit or a number of smaller pits in close proximity to one another. It is assumed that the mine would encompass about 3,000 acres including pits, waste rock piles, processing facilities, roads, exploration drill pads, and operations facilities. These disturbance areas are expected to be long-term effects.

- It is anticipated that three medium sized open-pit mines would be developed or undergo moderate expansion during the next 20 years. The mines would consist of pits, waste rock piles, processing facilities, roads, exploration drill pads, and operations facilities. Each medium open-pit mine would disturb about 700 acres resulting in a total disturbance of 2,100 acres that would be of long-term duration.

- It is expected that as many as six small mines would be developed or undergo moderate expansion during the next 20 years. The mines each would consist of small pits, waste rock piles, processing facilities, roads, exploration drill pads, and operations facilities. Each small mine would cover an area of as much as 400 acres resulting in a total disturbance of as much as 2,400 acres. These disturbances could be either short- or long-term in their duration, depending on the specific operation. In this analysis, they are assumed to be long-term in nature.

- Total disturbance during the next 20 years from locatable mining development associated with the above operations would be approximately 7,500 acres, or 0.07 percent of the decision area.

- Reclamation of post-mining disturbance areas would be required by both federal and state regulations.

Mineral Materials. Mineral materials development potential in the decision area is based on reasonable foreseeable development scenarios developed in conformance with applicable BLM policies. This analysis is presented in detail in the mineral potential report prepared for the RMP/EIS (ENSR 2004b). This document is available at the Ely Field Office. It is impossible to predict with certainty how resource development would occur in the future. The interaction of prices, markets, technology, and environmental concerns all play a role. The reasonable foreseeable development scenarios were developed based on known occurrences of mineral materials and estimates of future demand and development.

Reasonable Foreseeable Development Scenario. The following is a list of major assumptions upon which the reasonable foreseeable development scenario for mineral materials is based:

- There would be no major regulatory changes in federal or state statutes, regulations, policy, or guidance that govern the exploration and development of mineral materials.

- The disposal of mineral materials, such as sand, gravel, and decorative rock, which depend on market conditions and demand, would increase because of growth in the decision area and Clark County. In spite of the long haulage distances, mineral materials from the decision area would be competitive with sources closer to Las Vegas. In the near term, the most likely areas to have development of mineral material deposits would be in southern Lincoln County and the larger rural communities.

- The Nevada Department of Transportation would continue to mine gravel resources for road maintenance and construction. The exact location of the pits used by the Nevada Department of Transportation would be dictated by specific construction and maintenance needs.

- Additional Community Pits would be developed for the needs of expanding local communities.

- Current development of mineral materials is estimated at approximately 2,200 acres in approximately 400 existing pits. Projected additional development during the next 20 years is estimated at 1,000 acres.

Interactions with Other Programs

The minerals management program of the Ely Field Office is affected primarily by closures, restrictions, and mitigations as a result of other resource programs.

Goal

Allow for meeting the Nation's energy needs while providing environmentally responsible production of fluid leasable minerals and geophysical exploration for energy resources on public lands. Allow development of solid leasable and locatable minerals in a manner to prevent unnecessary or undue degradation. Allow development of mineral materials in a manner that would prevent unnecessary or undue degradation, meet public demand, and minimize adverse impacts to other resource values.

Objective

To provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to geology and mineral extraction also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Geology and Mineral Extraction Management Actions.

Parameter – Fluid Leasable Minerals

The Proposed RMP would use traditional surface use and timing restrictions to estimate the location and acres of the stipulations. As much as possible, sensitive resource areas were designated as "no surface occupancy" as opposed to "closed." For very large areas of sensitive resources, the outer 0.5 mile would be designated as "no surface occupancy" while the core area would be designated as "closed" since this would be essentially unavailable for operations. Exceptions to many of the no surface occupancy designations in the Proposed RMP were written into the individual site specific stipulations (see Appendix F, Section 2). The Proposed RMP would give the best balance between protecting the resource and allowing maximum flexibility and availability to the operator.

Under the Proposed RMP, approximately 1.5 million acres (13 percent of the decision area) would be closed to leasing and about 10.0 million acres (about 87 percent) would be open for leasing (see **Table 2.4-18**). Designated wilderness and wilderness study areas, totaling 1.1 million acres, are closed to all mineral entry and are considered non-discretionary closures. The Proposed RMP has discretionary closures totaling about 311,300 acres (2.7 percent of the decision area) outside of designated wilderness and wilderness study areas. Approximately 6.1 million acres (53 percent of the decision area) would be available for leasing under standard lease terms and conditions, 3.7 million acres (32 percent of the decision area) would be available to leasing subject to moderate constraints or surface use and timing stipulations (see **Table 2.4-19**), and approximately 233,600 acres (2.1 percent of the decision area) would be available to leasing subject to major constraints or no surface occupancy (see **Table 2.4-20** and **Map 2.4.18-1**).

About 9.3 million acres (80 percent) of the Ely decision area are considered high to medium potential for oil and gas. For the Proposed RMP, approximately 71 percent of the areas closed or with no surface occupancy restrictions would occur in areas that have a high to moderate potential for the occurrence of fluid minerals. About half of these acres occur in designated wilderness and wilderness study areas. Discretionary closures and no surface occupancy areas make up about 5 percent of the decision area.

Some of the no surface occupancy restrictions in current management were not carried forward to the proposed RMP. A list of these sites is shown in **Table 4.18-4**. These sites did not meet special management criteria and would be adequately protected under the standard lease terms and conditions as well as best management practices, conditions of approval, and site specific mitigations.

Lease notices related to the Pony Express Trail, the Sunshine Locality National Register District and desert tortoise habitat are carried forward to the Proposed RMP from current management. Additional cultural lease notices were identified for the Proposed RMP.

Additional areas of no surface occupancy that met the criteria for an ACEC have been proposed that were not included in Alternative A. **Table 4.18-5** lists all of the ACECs proposed for no surface occupancy.

Other areas proposed for No Surface Occupancy in the Proposed RMP did not meet ACEC criteria, but were selected for no surface occupancy restriction because they may not be adequately protected under standard lease terms and conditions. **Table 4.18-6** lists these areas with the rationale.

Table 4.18-4
No Surface Occupancy Areas not Carried Forward from Current Management

Area	Acres
Antelope Summit Recreation Sites	80
Bald Eagle Habitat	45
Bassett Lake Recreation Site	214
Black Point Recreation Site	1,204
Bonneville Cutthroat Trout Threatened and Endangered	460
Comins Lake Recreation Site	120
Ferruginous Hawk Nest Sites (40 acres each)	9,058
Highway 6 Threatened and Endangered Species Habitat	247
Huntington Valley Archeology Site	623
Little Smokey Valley Antelope Wall	345
Little Smokey Valley Paleo Indian Quarry	3,100
Monte Neva Paintbrush Threatened and Endangered	154
Newark Cave	120
Newark Valley Tui Chub Threatened and Endangered	40
Orchard Canyon Riparian Area	360
Ragged Ridge Scenic Area	2,200
Railroad Valley Springfish Threatened and Endangered	2
Sunnyside Green Gentian Threatened and Endangered[1]	640
Welshes Cateye Threatened and Endangered	650
White River Spinedace Threatened and Endangered	360
Total	**20,022**

[1] Incorporated into new White River Valley ACEC.

Table 4.18-5
ACECs proposed for No Surface Occupancy in the Proposed RMP

Name (ACEC)	Acres
Baker Archeology Site Proposed ACEC	80
Baking Powder Flat Proposed ACEC	6,620
Beaver Dam Slope ACEC[1]	36,800
Blue Mass Scenic Area Proposed ACEC	950
Condor Canyon Proposed ACEC	2,880
Hendry's Creek/Rock Animal Corral Proposed ACEC	3,625
Highland Range Proposed ACEC	3,700
Honeymoon Hill/City of Rocks Proposed ACEC	3,900
Lower Meadow Valley Wash Proposed ACEC	25,000
Mormon Mesa ACEC[1]	66,400
Mount Irish Proposed ACEC	8,000
Pahroc Rock Art Proposed ACEC	2,400
Rose Guano Bat Cave Proposed ACEC	40
Schlesser Pincushion Proposed ACEC	4,930
Shooting Gallery Proposed ACEC	5,800
Shoshone Ponds Proposed ACEC	1,240
Snake Creek Indian Burial Cave Proposed ACEC	40
Swamp Cedar Proposed ACEC	3,200
White River Valley Proposed ACEC	13,100
Total	**188,705**

[1] Subject to exception. See Appendix F, Section 2.

Table 4.18-6
Additional No Surface Occupancy for Fluid Mineral Leasing

Name	Acres	Rationale
Andies Mine Trilobite Site	180	Important fossil resource
Ash Springs Proposed Withdrawal	80	Previously applied for withdrawal to protect site
Caliente Field Station	2	Protect administration site
Cleve Creek Recreation Area	90	Important recreation site
Egan Crest Trailhead	250	New recreation site
Garnet Hill Recreation Area	160	Protect recreation site
Illipah Reservoir	290	Previously closed to leasing in Alternative A
Kirch Wildlife Management Area	5,000	New Recreation Development Act
Pony Springs Fire Station	10	New lands decision
Sacramento Pass Recreation Area	440	New recreation site
Sunshine Locality National Register District	6,460	High density of sensitive artifacts
Greater Sage-Grouse Leks	31,520	Provide protection to greater sage-grouse and consistency with national policy
Ward Mountain Recreation Site	240	Smaller area than Alternative A
White Pine County Shooting Range	255	Previously closed in Alternative A
White River Archaeological District	230	Protect new development areas
Total	**45,207**	

Some areas closed to leasing in current management were not brought forward as recommendations for closure in the Proposed RMP. These sites did not meet special management criteria and would be adequately protected under the standard lease terms and conditions as well as best management practices, conditions of approval, and site specific mitigations. These areas are shown in **Table 4.18-7**.

Table 4.18-7
Areas Currently Closed to Leasing That Are Not Closed in the Proposed RMP

Area	Acres
Cave Valley Cave	40
Cold Creek Reservoir Recreation Area	220
Nevada Division of Forestry Honor Camp	180
Total	**440**

Additional areas would be closed in the proposed RMP that are not listed under current management. These areas include core areas of large ACECs that could not be accessed if the entire area were to be designated as no surface occupancy. Other areas are protective withdrawals around communities. These areas are summarized in **Table 4.18-8**.

Geophysical exploration would be conducted under the best management practices described in Appendix F, Section 1. Notices of Intent submitted for the conduct of geophysical surveys would be evaluated on case-by-case basis.

Table 4.18-8

Other Areas Closed to Fluid Mineral Leasing in the Proposed RMP

Name	Acres
Baker Proposed Withdrawal	6,720
Baking Powder Flat Proposed ACEC	7,020
Condor Canyon Proposed ACEC	1,625
Highland Range Proposed ACEC	3,200
Kane Spring ACEC	57,190
Coyote Springs leased public lands (Congressional)	6,200
Lincoln County Conservation, Recreation, and Development Act State Park	4,775
Lincoln County Conservation, Recreation, and Development Act Utility Corridors	113,425
Lincoln County Proposed Disposals	57,000
Mount Irish Proposed ACEC	7,100
Murry Spring Watershed	1,260
Shooting Gallery Proposed ACEC	9,800
Steptoe Valley Wildlife Management Area Expansion	6,265
Sunshine Locality National Register District	12,640
White Pine County Conservation, Recreation, and Development Act Airport Expansion	1,260
White Pine County Conservation, Recreation, and Development Act Industrial Park Expansion	200
White Pine County Conservation, Recreation, and Development Act Additional Withdrawals	98,125
White Pine County Conservation, Recreation, and Development Act Disposals	18,600
Total*	**412,405**

* Total acres differ from summary table due to overlap among individual areas and categories.

Parameter – Solid Leasable Minerals

Under the Proposed RMP, approximately 9.9 million acres (86 percent of the decision area) would be available to solid leasable minerals and 1.6 million acres (14.3 percent of the decision area) would be closed. Of the closed acreage, 1.1 million acres would be in designated wilderness and wilderness study areas and approximately 494,500 acres (4.3 percent of the decision area) would be discretionary closures (see **Map 2.4.18-2**).

The analysis of closed acres as compared to the proposed action is the same as for locatable minerals. The impact of those closed acres on the solid leasable program is almost inconsequential because the current and future potential for these minerals is extremely low. Currently, there is no solid leasable activity on the decision area and potential is very low.

Parameter – Locatable Minerals

Impacts from Geology and Mineral Extraction Management Actions. Under the Proposed RMP, approximately 9.9 million acres (86 percent of the decision area) would be open to locatable mineral development and 1.6 million acres (14.3 percent of the decision area) would be proposed for closure (**Table 2.4-23**). The proposed closures would include approximately 494,500 acres (4.3 percent of the decision area) outside of designated wilderness and wilderness study areas (see **Map 2.4.18-2**).

About 3.5 million acres (31 percent) in the decision area are considered to be high to medium potential for some type of locatable mineral. Within this, about 14 percent of the area closed to locatable minerals would be in areas with high to medium potential. Over half these acreages are within designated wilderness.

All areas withdrawn from mineral entry in the current management will be brought forward in the RMP.

Additional areas are proposed for withdrawal in the Proposed RMP that are not listed under Alternative A. **Table 4.18-9** lists these areas and their rationale for closure.

Table 4.18-9

Areas Not Closed in Current Management (Alternative A), but Proposed for Withdrawal for Locatable Mineral and Mineral Material Disposal under the Proposed RMP

Name	Acres	Rationale
Andies Mine Trilobite Site	180	High density of sensitive artifacts
Baker Archaeological Site Proposed ACEC	80	High density of sensitive artifacts
Baker Proposed Withdrawal	6,720	Community withdrawal
Baking Powder Flat Proposed ACEC	13,640	Proposed for ACEC
Beaver Dam Slope ACEC	36,800	Closed for consistency with other ACECs and to provide better protection to the desert tortoise
Condor Canyon Proposed ACEC	4,500	Proposed for ACEC
Coyote Springs Leased Public Lands	6,200	Congressional decision
Egan Crest Trailhead	250	Important recreation site
Garnet Hill	160	Important recreation site
Hendry's Creek Rock Animal Corral Proposed ACEC	3,625	Proposed for ACEC
Highland Range Proposed ACEC	6,900	Proposed for ACEC
Honeymoon Hill / City of Rocks Proposed ACEC	3,900	Proposed for ACEC
Kirch Wildlife Management Area	5,000	Important priority habitat
Lincoln County Disposals (difference)	53,400	Proposed for disposal/withdrawal
Lower Meadow Valley Wash Proposed ACEC	25,000	Proposed for ACEC
Mormon Mesa ACEC	66,430	Proposed for ACEC
Mount Irish Proposed ACEC	15,100	Proposed for ACEC
Pahroc Rock Art Proposed ACEC	2,400	Proposed for ACEC
Schlesser Pincushion Proposed ACEC	4,930	Proposed for ACEC
Shooting Gallery Proposed ACEC	15,600	Proposed for ACEC
Steptoe Valley WMA Expansion	6,265	Carried forward for withdrawal
Swamp Cedar Proposed ACEC	3,200	Proposed for ACEC
Ward Mountain Recreation Site	240	Important recreation site
White Pine County Proposed Disposals	18,600	Community withdrawals
White Pine County Shooting Range	255	Important recreation site
White River Archaeological District	230	High density of sensitive artifacts
White River Valley Proposed ACEC	13,100	Proposed for ACEC
Total	**312,705**	

Parameter – Mineral Materials

Under the Proposed RMP, about 9.9 million acres (86 percent of the decision area) would be open to possible disposal for mineral materials development, but subject to discretionary closures and best management practices. Approximately 1.6 million acres (14 percent of the decision area) would be closed to mineral materials development, including 488,800 acres (4.2 percent of the decision area) outside of designated wilderness and wilderness study areas (see **Map 2.4.18-2**). The list of additional closures in the Proposed RMP as compared to Alternative A is shown in **Table 4.18-9**.

Additional site-specific and discretionary closures may be developed with implementation plans that could close some areas to mineral material disposal. Where closures are due to land disposals, there could be an increased demand for mineral materials in the surrounding areas.

Impacts from Other Programs

The management actions in the Proposed RMP contain provisions to protect other resources through stipulations, best management practices, or closures that have varying degrees of impact on the recovery of mineral resources. However, since the majority of the decision area would remain open to leasing, mineral entry, or disposal of mineral materials, the minerals program would not be unduly limited by the proposed management direction.

Fish and Wildlife. Protection measures associated with priority habitats for wildlife would impose constraints on the geology and mineral extraction program. Key examples include the timing stipulations on fluid leasable mineral development activities within the various priority wildlife habitats (e.g., big game crucial winter range, big game calving/fawning/kidding/lambing areas, desert bighorn sheep habitat) (see **Table 2.4-19**). Additionally, operators would be required to improve or replace 2 acres of comparable quality habitat for each acre of priority habitat disturbed.

Special Status Species. Protection measures for several special status species would impose constraints on the geology and mineral extraction program. Key examples include the timing stipulations on fluid leasable mineral development activities within the various habitats managed for the benefit and protection of special status species (e.g., greater sage-grouse nesting habitat, greater sage-grouse winter habitat, raptor nest sites, and desert tortoise habitat) (see **Table 2.4-19**). Disturbances within desert tortoise habitat would require compensation through remuneration fees established under the desert tortoise Biological Opinion.

Cultural Resources and Paleontological Resources. Protection measures associated with cultural and paleontological resource sites outside of ACECs and other special designations (e.g., White River Archaeological District and Andies Mine Trilobite Site) would impose constraints on the geology and mineral extraction program through no surface occupancy stipulations for fluid mineral development and closure to other types of mineral development (see **Tables 2.4-20** and **2.4-23**).

Recreation. Various recreation sites will be removed from potential mineral development through no surface occupancy stipulations on fluid mineral development and closure to other types of minerals (see **Tables 2.4-20** and **2.4-23**). These removals would have minimal effect on mineral development.

Special Designations. Designated wilderness, wilderness study areas, ACECs, the White River Archaeological District, and the Garnet Hill Rock Hounding Area impose closures or various types of constraints on mineral development (see **Tables 2.4-20**, **2.4-21**, and **2.4-23**).

Conclusions. The majority of the decision area would be open to fluid mineral exploration and development. The areas proposed for closure to leasing or those with no surface occupancy restrictions that are outside of wilderness, yet within high to moderate potential is less than 5 percent of the decision area. Therefore, the proposed management would allow for the exploration and development of oil and gas while protecting important resource values.

The decision area has a low potential for the occurrence of solid leasable mineral resources, so the closure of the lands described would likely have little impact on the exploration and development of solid leasable minerals.

Less than 5 percent of the decision area would involve discretionary closures to locatable minerals within high to medium potential. This small percentage of withdrawn areas is not expected to have a major impact on the recovery of locatable minerals. Therefore, the Proposed RMP would allow for the exploration and development of locatable minerals while protecting important resource values.

Because mineral material occurrences are so common and widespread, there should be little impact to the availability of these deposits despite the proposed closures and areas where discretionary closures are likely. It is expected that there would be sufficient resources available to meet local, regional, and national needs, while providing for the protection of other resources and uses.

Alternative A

Impacts from Geology and Mineral Extraction Management Actions.

Parameter – Fluid Leasable Minerals

Under Alternative A, only the areas covered by the Egan Oil and Gas Leasing Amendment and the Desert Tortoise Amendment would be available for leasing. This involves only about 40 percent of the decision area. Approximately 6.9 million acres would be unavailable to fluid minerals leasing because the impacts of leasing have not been analyzed in this area. Within the areas that are available for leasing, there would be about 2.7 million acres (60 percent of the current leasing area or 24 percent of the decision area) under standard terms and conditions.

Lease Notices. Alternative A has cultural notices for the Pony Express Trail and for the Sunshine Locality National Register District. The Pony Express Trail lease notice lets the operator know that there could be special visual mitigations required within the view shed of the Pony Express Trail. The Sunshine Locality Lease Notice surrounds the core area of the Sunshine Locality National Register District, which has a no surface occupancy designation. The lease notice lets the operator know that there could still be a high density of potentially significant cultural artifacts around that core area that may require consultation, mitigation, or treatment plans.

In desert tortoise habitat a lease notice is in effect which informs the lessee that Section 7 consultation will be completed prior to any surface disturbance. **Table 2.5-12** shows the areas that are listed as lease notices in Alternative A.

Moderate Restrictions – Traditional Surface Use/Timing. There would be approximately 1.2 million acres (26 percent of the leasing area or 10 percent of the decision area) open for leasing with surface use and/or timing restrictions. Surface use and/or seasonal timing restrictions would be in place for the protection of greater sage-grouse leks and greater sage-grouse winter habitat, ferruginous hawk nesting territories, and desert tortoise habitat as shown in **Table 2.5-13** and **Map 2.5.18-1**. Timing restrictions for the protection for other raptors, big game, and desert bighorn sheep habitat would be applied as best management practices during ground disturbing activities.

Major Restrictions – No Surface Occupancy. Major restrictions under this alternative consist of 46,000 acres (1 percent of the leasing area or 0.4 percent of the decision area) of no surface occupancy for the resources shown in **Table 2.5-14** and **Map 2.5.18-1**.

Closed to Leasing. There would be approximately 591,700 acres (13.0 percent of the leasing area or 4.5 percent of the decision area) closed to leasing within the limited leasing area. The areas closed to leasing include approximately 471,900 acres within designated wilderness and wilderness study areas, and 119,800 acres (2.6 percent of the leasing area) of additional closures outside of the designated wilderness/wilderness study areas as shown in **Table 2.5-15** and **Map 2.5.18-1**.

In Alternative A there is high to medium oil and gas potential within about 92 percent of the entire area considered for leasing. The areas designated as "closed" and "no surface occupancy" occupy about 13 percent of this high and medium potential with about 80 percent of those acres in designated wilderness.

Parameter – Solid Leasable Minerals

Under Alternative A, about 10.1 million acres (88 percent of the decision area) would be open to solid leasable mineral leasing and 1.4 million acres (12 percent of the decision area) would be closed. Most of the closed acreage would involve designated wilderness and wilderness study areas (about 1.1 million acres), while approximately 212,400 acres would be closed in areas outside of the designated wilderness and wilderness study areas (see **Map 2.5.18-2**). The analysis of closed acres as compared to the proposed action is the same as for locatable minerals. The impact of those closed acres on the solid leasable program is almost inconsequential because the current and future potential for these minerals is extremely low. Currently there is no solid leasable activity on the decision area and potential is very low. Locatable minerals on acquired lands would be managed as solid leasable minerals. However, this would not be any different than in the locatable mineral program because the same areas would be withdrawn in both programs.

Parameter – Locatable Minerals

Under Alternative A, about 10.1 million acres (88 percent of the decision area) would be open to locatable mineral development and 1.4 million acres (12 percent of the decision area) would be proposed for withdrawal including approximately 212,400 acres (1.8 percent of the decision area) outside of wilderness study areas (see **Map 2.5.18-2**).

The majority (88 percent) of the decision area is open to locatable minerals and solid leasable minerals. High to medium mineral potential of all types of locatable minerals and solid leasables encompass about 31 percent of the decision area. Within this high to medium potential area there are about 13 percent of the area that would be withdrawn or proposed for withdrawal. About 92 percent of the withdrawn areas in high to medium potential are in designated wilderness. The relative small percentage of acreage proposed for withdrawal outside of designated wilderness would not have a major impact on locatable mineral development in general.

Parameter – Mineral Materials
In Alternative A, approximately 10.0 million acres (87 percent of the decision area) would be open to possible disposal for mineral material development. Another 1.5 million acres (13 percent of the decision area) would be closed to mineral material development, including 391,300 acres outside of designated wilderness and wilderness study areas (see **Map 2.5.18-3**).

Impacts from Other Programs. The fluid minerals program is affected by provisions to protect other resources through stipulations, standard operating procedures, and Standard Terms and Conditions for Mineral Development within the Ely District, Appendix J and Appendix M, respectively, of the Draft Ely RMP/EIS (July 2005) that have varying degrees of impact on the recovery of fluid minerals. Therefore, the fluid minerals program would not be adversely affected by additional management direction unique to other resource programs within this alternative.

As for the program involving leasable solid minerals, locatable minerals, and mineral materials, protection of other resources has been incorporated into the management direction for the minerals program through closures, standard operating procedures, and Standard Terms and Conditions for Mineral Development within the Ely District, Appendix J and Appendix M, respectively, of the Draft Ely RMP/EIS (July 2005), and mitigations that may occur during site-specific NEPA analysis. Thus, the minerals program would not be adversely affected by additional management direction unique to other resource programs within this alternative. Because mineral material actions are discretionary, additional management directions in other resource programs could be developed to further mitigate or relocate mineral material disposals within this alternative.

Special Status Species. Protection measures for several special status species would impose constraints on the geology and mineral extraction program. Key examples include the timing and surface use stipulations on fluid leasable mineral development activities within the various habitats managed for the benefit and protection of special status species (e.g., greater sage-grouse nesting habitat, greater sage-grouse winter habitat, ferruginous hawk nest sites, Bonneville cutthroat trout habitat, Railroad Valley springfish habitat, and desert tortoise habitat) (see **Tables 2.5-13** and **2.5-14**).

Fish and Wildlife. Alternative A does not include specific protection measures associated with priority habitats for wildlife. Concerns related to wildlife species would be addressed through the site-specific NEPA analysis associated with individual projects.

Cultural Resources and Paleontological Resources. Protection measures associated with cultural resource sites outside of ACECs and other special designations (e.g., Sunshine Locality National Register District, Snake Creek Indian Burial Cave and City of Rocks Archaeological Site) would impose constraints on the geology and mineral extraction program through no surface occupancy stipulations for fluid mineral development and closure to other types of mineral development (see **Tables 2.5-14** and **2.5-18**). No specific paleontological sites are identified for protection under this alternative.

Recreation. Various recreation sites will be removed from potential mineral development through no surface occupancy stipulations on fluid mineral development and closure to other types of minerals (see **Tables 2.5-14** and **2.5-18**). These removals will have minimal effect on mineral development.

Special Designations. Designated wilderness, wilderness study areas, desert tortoise ACECs, various archaeological sites, various recreation sites, and natural areas impose constraints on mineral development (see **Tables 2.5-14**, **2.5-15**, and **2.5-18**) either in terms of areas open for development of the types of activities that are allowed.

Conclusions. Alternative A limits the oil and gas program mostly due to the small percentage of the decision area that is available to leasing due to the limited coverage of previous NEPA analyses. It is difficult to compare Alternative A with the Proposed RMP because of the difference in acres available for leasing. Looking only at the areas available for leasing in both programs, the differences are small. The Proposed RMP identifies more ACECs and emphasizes the use of no surface occupancy more often than in Alternative A. In Alternative A there is high to medium oil and gas potential within about 92 percent of the entire area considered for leasing. The areas designated as “closed” and “no surface occupancy” occupy about 13 percent of this high and medium potential with about 80 percent of those acres in designated wilderness. Under current management there would be noticeable impact on the ability to develop oil and gas resources because over half the decision area is currently not available for leasing.

The decision area has a low potential for the occurrence of solid leasable mineral resources so the closure of the lands described would likely have little impact on the exploration and development of solid leasable minerals.

About 1.8 percent of the decision area in Alternative A as compared to about 4.3 percent in the Proposed RMP would involve discretionary closures to development of locatable minerals within high to medium potential. This small percentage of withdrawn areas is not expected to have a major impact on the recovery of locatable minerals. Therefore, Alternative A might allow for slightly more opportunities (2.5 percent of the decision area) for the exploration and development of locatable minerals but would not protect important resource values as well as the Proposed RMP.

The total acreage open to mineral materials disposal would be about 87 percent of the decision area. Most of the closed areas are non-discretionary closures for designated wilderness or wilderness study areas and not subject to the management of the Ely Field Office. Proposed discretionary closures would be about 3.4 percent of the decision area. Because mineral material occurrences are so common and widespread, there should be little impact to the availability of these deposits despite the proposed closures and areas where discretionary closures are likely.

Alternative B

Impacts from Geology and Mineral Extraction Management Actions.

Parameter – Fluid Leasable Minerals

Alternative B attempted to target broad areas with programmatic stipulations that would be dependent on finding the species or resource of concern in the site-specific area for the stipulation to be in effect. The idea was to provide maximum flexibility to the operator while providing better protection to the resource, especially wildlife resources that frequently move. The main concern with this concept was that it created larger areas subject to a potential stipulation as compared to the smaller areas of traditional timing stipulations that would be in effect regardless of whether or not the resource was present.

Geophysical exploration would not occur in areas closed to leasing or designated as no surface occupancy. Where allowed, geophysical exploration would be subject to the standard operating procedures and Standard Terms and Conditions for Mineral Development within the Ely District, Appendix J and Appendix M, respectively, of the Draft Ely RMP/EIS (July 2005).

Under Alternative B, approximately 10.0 million acres (87 percent of the decision area) would be open to leasing. Of this, 1.1 million acres (9.5 percent of the decision area) would be available for leasing under standard terms and conditions, and 8.5 million acres (74 percent of the decision area) would be subject to moderate constraints under programmatic stipulations for wildlife and cultural resources. Approximately 429,600 acres (3.8 percent of the decision area) would be available to leasing subject to moderate constraints with traditional surface use and timing restrictions, and 32,300 acres (0.3 percent of the decision area) would be available to leasing subject to major constraints (no surface occupancy) (see **Map 2.6.18-1**). Approximately 1.6 million acres (13 percent of the decision area) would be closed to leasing with 1,153,500 acres as non-discretionary designated wilderness and wilderness study areas and 347,800 acres (3.0 percent of the decision area) closed as additional discretionary closures.

Under Alternative B, approximately 67 percent of the 1.4 million acres that would be closed to leasing or have a no surface occupancy restriction would occur in areas that were high to moderate for fluid mineral potential. Of this area, over half is in designated wilderness.

Parameter – Solid Leasable Minerals

Under Alternative B, the same statistics that are described for locatable minerals would apply to solid leasable minerals (see **Map 2.6.18-2**).

Parameter – Locatable Minerals

Under Alternative B, about 10.0 million acres (87 percent of the decision area) would be open to locatable mineral development and 1.5 million acres (13 percent of the decision area) would be proposed for closure to mineral entry. The withdrawal acreage would include about an additional 375,100 acres (3.3 percent of the decision area) outside of designated wilderness and wilderness study areas (see **Map 2.6.18-2**).

About 16 percent of the acres closed to locatable minerals would be in areas with high to medium potential for some type of locatable mineral with over half these acres within designated wilderness.

Parameter – Mineral Materials

Under Alternative B, about 9.3 million acres (81 percent of the decision area) would be open to possible disposal for mineral materials development, but subject to standard operating procedures and Standard Terms and Conditions for Mineral Development within the Ely District, Appendix J and Appendix M, respectively, of the Draft Ely RMP/EIS (July 2005). Approximately 2.2 million acres (19 percent of the decision area) would be closed to mineral materials development, including 1.0 million acres (8.9 percent of the decision area) outside of designated wilderness and wilderness study areas (see **Map 2.6.18-3**).

Impacts from Other Programs. The management actions proposed in Alternative B contain provisions to protect other resources through stipulations, standard operating procedures, and Standard Terms and Conditions for Mineral Development within the Ely District, Appendix J and Appendix M, respectively, of the Draft Ely RMP/EIS (July 2005), or closures that have varying degrees of impact on the recovery of mineral resources. However, since the overwhelming majority of the decision area would remain open to leasing, mineral entry, or disposal of mineral materials, the minerals program would not be unduly limited by the proposed management direction. Because mineral material actions are discretionary, additional management directions in other resource programs could be developed to further mitigate or relocate mineral material disposals within this alternative.

Special Status Species. Protection measures for several special status species would impose constraints on the geology and mineral extraction program similar to the Proposed RMP. Key examples include the timing stipulations on fluid leasable mineral development activities within desert tortoise habitat, greater sage-grouse habitat, and near ferruginous hawk nests (see Section 2.6.18).

Fish and Wildlife. Protection measures associated with occupied habitat for bighorn sheep would impose timing stipulations on fluid mineral development activities (see Section 2.6.18).

Cultural Resources. Protection measures associated with cultural resource sites outside of ACECs and other special designations (e.g., Garrison Archaeological Site, Ward Charcoal Ovens) would impose constraints on the geology and mineral extraction program through closure to leasing or no surface occupancy stipulations for fluid mineral development and closure to other types of mineral development (see Section 2.6.18).

Recreation. Various recreation sites will be removed from potential mineral development through closure to leasing or no surface occupancy stipulations on fluid mineral development and closure to other types of minerals (see Section 2.6.18). These removals would have minimal effect on mineral development.

Special Designations. Designated wilderness, wilderness study areas, ACECs, scenic areas, natural areas, and other types of special designations impose closures or various types of constraints on mineral development (see Section 2.6.18).

Conclusions. The percentage of closed and no surface occupancy areas are not substantially different than for the Proposed RMP. The main difference would be in how the stipulations were applied. All other conclusions would be the same as for the Proposed RMP.

Since the potential for solid leasable minerals in the Ely decision area is extremely low, and there are no current or reasonably foreseeable operations, the areas of closures would have little impact on the exploration and development of solid leasable minerals.

Alternative B would have approximately 119,400 fewer acres withdrawn from locatable mineral entry and a lower percentage of closed areas within areas of high to medium potential in comparison to the Proposed RMP. Alternative B would have slightly less impact to the development of locatable minerals but would not have the more defined protection of critical resources that are found in the Proposed RMP.

Alternative B closes about three quarters of the acreage of discretionary closures for locatable minerals in comparison with the Proposed RMP. The proposed management actions in Alternative B would meet the stated goal of the minerals program to provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses.

Alternative C

Impacts from Geology and Mineral Extraction Management Actions.

Parameter – Fluid Leasable Minerals

In comparison with the Proposed RMP, Alternative C would offer fewer acres available for leasing under standard terms and conditions mostly due to an increase in the proposed community withdrawals for this alternative. Moderate constraints such as timing and surface use stipulations would be similar to the Proposed RMP. Alternative C has surface use restrictions on some recreation sites rather than a no surface occupancy or closed designation as in the Proposed RMP.

Geophysical exploration would be considered in areas closed to leasing, designated as “no surface occupancy,” or subject to timing restrictions. Impact analyses would be conducted on a site-specific basis. Geophysical exploration would be subject to the best management practices as described in Appendix M of the Draft Ely RMP/EIS (July 2005). As a result, this alternative would provide for greater geophysical exploration/development potential.

Under Alternative C, 3.5 million acres (30 percent of the decision area) would be available for leasing under standard terms and conditions, 682,900 acres (5.9 percent of the decision area) would be available subject to moderate constraints with programmatic lease stipulations; 5.6 million acres (48 percent of the decision area) would be available to leasing subject to moderate constraints with traditional timing and surface use stipulations; 27,300 acres (0.2 percent of the decision area) would be available to leasing subject to major constraints (no surface occupancy); and 1.7 million acres (15 percent of the decision area) would be closed to leasing (see **Map 2.7.18-1**). Under Alternative C, approximately 68 percent of the 1.7 million acres that would be closed to leasing or have a no surface occupancy restriction would occur in areas that are high to moderate fluid mineral potential. Of this, over half is in designated wilderness.

Parameter – Solid Leasable Minerals
Under Alternative B, the same statistics that are described for locatable minerals would apply to solid leasable minerals (see **Map 2.7.18-2**).

Parameter – Locatable Minerals
Under Alternative C, about 9.8 million acres (85 percent of the decision area) would be open to locatable mineral development and 1.7 million acres (15 percent of the decision area) would be proposed for withdrawal. The withdrawal acreage would include 569,000 acres (4.9 percent of the decision area) withdrawn from mineral entry outside of wilderness study areas (see **Map 2.7.18-2**).

About 18 percent of the acreage closed to locatable minerals would be in areas with high to medium potential for some type of locatable mineral with about half these acres in designated wilderness.

Parameter – Mineral Materials
Under Alternative C, about 9.3 million acres (80 percent of the decision area) would be open to possible disposal for mineral material development. Approximately 2.2 million acres (20 percent of the decision area) would be closed to mineral materials development including 1.1 million acres (10 percent of the decision area) outside of designated wilderness and wilderness study areas (see **Map 2.7.18-3**).

Impacts from Other Programs. The management actions proposed in Alternative C contain provisions to protect other resources through stipulations, best management practices, or closures that have varying degrees of impact on the recovery of mineral resources. However, since the overwhelming majority of the decision area would remain open to leasing, mineral entry, or disposal of mineral materials, the minerals program would not be unduly limited by the proposed management direction. Because mineral material actions are discretionary, additional management directions in other resource programs could be developed to further mitigate or relocate mineral material disposals within this alternative.

Special Status Species. Protection measures for several special status species would impose constraints on the geology and mineral extraction program similar to the Proposed RMP. Key examples include the timing stipulations on fluid leasable mineral development activities within desert tortoise habitat, greater sage-grouse habitat, and near ferruginous hawk nests (see Section 2.7.18.2).

Fish and Wildlife. Protection measures associated with occupied habitat for bighorn sheep would impose timing stipulations on fluid mineral development activities (see Section 2.7.18.2).

Cultural Resources and Paleontological Resources. Protection measures associated with cultural and paleontological resource sites outside of ACECs and other special designations (e.g., Garrison Archaeological Site and Andies Mine Trilobite Site) would impose constraints on the geology and mineral extraction program through closure to leasing or no surface occupancy stipulations for fluid mineral development and closure to other types of mineral development (see Sections 2.7.18.2 and 2.7.18.4).

Recreation. Various recreation sites and caves would be protected from potential mineral development through no surface occupancy stipulations on fluid mineral development and closure to other types of minerals (see Section 2.7.18.2 and 2.7.18.4). These restrictions would have minimal effect on mineral development.

Special Designations. Designated wilderness, wilderness study areas, ACECs, scenic areas, natural areas, and other types of special designations impose closures or various types of constraints on mineral development (see Sections 2.7.18.2 and 2.7.18.4).

Conclusions. Alternative C would have approximately the same area closed to leasing as the Proposed RMP, but 3 percent less of these closed areas would be in high to medium potential. Alternative C further developed the stipulations from existing management rather than evaluate and identify new areas of resource protection as thoroughly as in the Proposed RMP. The differences in percentages between Alternative C and the Proposed RMP are not enough to state that either alternative would have more impact than the other. The overall differences would be minimal compared to the size of the decision area.

Since the potential for solid leasable minerals in the Ely decision area is extremely low, and there are no current or reasonably foreseeable operations, the areas of closures would have little impact on the exploration and development of solid leasable minerals.

There would be comparable acreage proposed for withdrawal for locatable minerals in Alternative C as in the Proposed RMP. Within the withdrawals there would be approximately 13 percent more within high to medium potential in the Proposed RMP than for Alternative C. Therefore, even though approximately the same acreage is proposed for withdrawal in Alternative C, fewer of those acres are within high to medium potential. Therefore, Alternative C could have less impact to the development of locatable minerals than the Proposed RMP. The overall differences would be minimal compared to the size of the decision area. Because mineral material occurrences are so common and widespread, even with the differences in withdrawals, there should be little impact to the availability of these deposits despite the proposed closures and areas where discretionary closures are likely.

Alternative D

Impacts from Geology and Mineral Extraction Management Actions.

Parameter – Fluid Leasable Minerals
Under Alternative D, the entire decision area would be closed to leasing. Geophysical exploration would not necessarily be conducted under the standard operating procedures and Standard Terms and Conditions for

Mineral Development within the Ely District, Appendix J and Appendix M, respectively, of the Draft Ely RMP/EIS (July 2005), and Notices of Intent submitted for the conduct of geophysical surveys would be evaluated on case-by-case basis.

Parameter – Solid Leasable Minerals

Under Alternative D, the entire decision area would be closed to solid leasable minerals, including 1.1 million acres in wilderness study areas.

Parameter – Locatable Minerals

Under Alternative D, approximately 5.2 million acres (45 percent of the decision area) would be open to locatable mineral development. Approximately 6.3 million acres (55 percent of the decision area) would be closed to locatable mineral development, including 5.2 million acres (45 percent of the decision area) outside of designated wilderness and wilderness study areas (see **Map 2.8.18-1**). Of the acres closed, approximately 32 percent would be in areas of high to medium potential and of that 8 percent is in designated wilderness and wilderness study areas.

Parameter – Mineral Materials

Under Alternative D, the entire decision area would be closed to mineral materials development.

Impacts from Other Programs. The leasable minerals (fluid and solid) program is affected by provisions to protect other resources through stipulations, standard operating procedures, and restrictions that have varying degrees of impact on the recovery of fluid minerals. Since no leasing would occur under Alternative D, the stipulations, standard operating procedures, and restrictions would still be in effect on current leases or leases that may become held by production. The proposed management action to close the entire decision area to leasing would have a much greater impact than the provisions on current leases to protect other resources. Therefore, the fluid minerals program, where it is allowed to exist under this alternative, would not be adversely affected by additional management direction unique to other resource programs within this alternative.

The protection of other resources has been incorporated into the management direction for the locatable minerals program through best management practices, restrictions, and mitigations that may occur during site-specific NEPA analysis. However, the closure of nearly 50 percent of the decision area to locatable mineral entry would have a much greater impact than the management actions to protect other resources on those lands open to locatable minerals. The only other resource management program to have noticeable effect on geology and minerals extraction under this alternative would be special designations, since designated wilderness and wilderness study areas (combined total of 1.1 million acres) would be closed to development of locatable minerals. Otherwise, the locatable minerals program would not be adversely affected by additional management direction unique to other resource programs.

The mineral materials management program of the decision area is affected by closures, restrictions, and mitigations applicable to all alternatives. Because mineral material actions are discretionary, additional management directions in other resource programs could be developed to further mitigate or relocate mineral material disposals within this alternative. However, if the entire decision area is closed to mineral material disposal, further management direction in other resource programs would not matter.

Conclusions. The entire decision area would be closed to new fluid minerals leasing, but existing leases would be honored. The effects would be to preclude exploration and development (except on existing leases) and result in the loss of the resource available to the country, loss of potential lease bonus and rental revenue, loss of potential production royalties and property taxes, and other losses to related economic activity in the decision area. If no discoveries are made on existing leases, the leases would expire over time resulting in a total cessation of fluid mineral activities. Since 80 percent of the area has a high to medium potential for fluid minerals (especially oil and gas) and those resources would be unavailable, this extensive closure of lands described above would adversely affect the exploration and development of fluid minerals.

Because there is no current solid leasable activity and the potential is low, the closure of the entire decision area would not be important unless an economical deposit was discovered.

With over half the decision area withdrawn from mineral entry, there would be a major impact on the exploration and development of locatable minerals. Alternative D would not meet the stated goal of the minerals program to provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses. The withdrawal of over half the decision area would cause severe limitations on access to current and potential locatable mineral deposits. Inability to explore and develop locatable minerals would result in loss of the resource to the country, loss of tax revenue, and other losses to related economic activity in the decision area.

The high demand for sand, gravel, and other mineral materials for development and construction would not be met under this alternative. Alternative D would not meet the stated goal of the minerals program to provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses. The closure would preclude development of mineral materials resources and result in the loss of an important resource to the public and the loss of related economic activity.

4.19 Watershed Management

In the past, projects and resource actions were proposed on a site-specific basis. These projects and actions were consistent with applicable resource management plans and competed for program funds for implementation. In some cases, mid-scale level of analysis from activity level planning may have occurred. Under the new plan, there would be more emphasis on integrated management and funding across programs within a watershed unit.

Currently, watershed analysis is performed to determine if rangeland health standards are being met within a watershed. This involves an analysis of uses of vegetation by livestock, wildlife, and wild horses as appropriate. It also involves analysis of other uses within the watershed. These include such things as: mineral exploration and development, off-highway vehicle use, recreation, and rights-of-way development. If rangeland health standards are being met, the restoration plan (a portion of the watershed analysis) would propose projects and resource uses designed to maintain the healthy condition of the watershed. If standards are not being met, the restoration strategy would propose guidance of resource uses designed to improve the condition of the watershed and meet or achieve rangeland health standards. Watershed analysis would occur according to the priority identified in Chapter 2.0, but could be used independently for small areas to facilitate implementing site-specific restoration activities, such as fuel reduction projects in areas that pose threats to life, property, or special status species, without waiting for the full watershed analysis.

There are 61 watershed units within the planning area. It is expected that completion of watershed analyses, including restoration plans with proposed projects, on the 41 high priority watersheds would take approximately 10 years. Completion of watershed analyses on the remaining 20 lower priority watersheds would occur in the next 10 years.

Primary factors for analysis of the alternatives include: 1) priority of watershed to be analyzed; and 2) the allocation of forage after standards for rangeland health are met.

Impact Issues

Watershed management on the Ely planning area would focus on achieving rangeland health through all available tools. A non-functioning watershed, where rangeland health standards are not being met, may cause a decrease in water yield. Where trees increase in shrub communities, there is a loss of 25 to 40 millimeters for each 10 percent increase in tree cover (Jackson et al. 2000). Attainment of functional watersheds is described as reasonably foreseeable treatments related to soils and associated vegetation in **Tables 3.19-2**, **3.19-3**, and **3.19-4**. Following restoration of resilient vegetation communities, it is expected that forage productivity would improve in most watersheds. Allocation of this increased production would vary among the alternatives.

As discussed in Section 4.5, Vegetation, where existing vegetation communities are in a resilient state, management actions would be implemented to maintain that resiliency; where they are not presently resilient, efforts would be made to restore resiliency. With the close linkage between watershed health and vegetation, any factors or events affecting vegetation also would affect watershed function. Impacts to watersheds would be similar and closely related to impacts to vegetation. To meet watershed objectives, a combination of tools (Appendix G) would be used as appropriate.

Actions designed to enhance wildlife and special status species habitats would be determined in some cases ahead of the watershed analysis. The reader should be aware that actions in all resource programs and uses affect watersheds. This is especially true concerning actions regarding vegetation, fish and wildlife, special status species, wild horses, livestock grazing, fire management and watershed management.

Assumptions for Analysis

- Restoration of watershed health and achievement of desired plant community composition, structure, and function is expected to require several decades.
- The weighting and priority of resource considerations used to establish the watershed priority list would remain static throughout the life of the plan.

Interactions with Other Programs

The watershed management program within the planning area is integrally linked with and potentially would be affected by actions within the resource management programs for vegetation, fish and wildlife, special status species, wild horses, lands and realty, livestock grazing, geology and mineral extraction, fire management, noxious and invasive weed management, and special designations.

Goal

Manage watersheds to achieve and maintain resource functions and conditions required for healthy lands and sustainable uses.

Northeastern Great Basin Resource Advisory Council Standards

- Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and land form.
- Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

- Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics; to provide suitable feed, water, cover, and living space for animal species; and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

- Land use plans will recognize cultural resources within the context of multiple use.

Mojave/Southern Great Basin Resource Advisory Council Standards

- Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.

- Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses.

- Riparian and wetland vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover; capture sediment; and capture, retain, and safely release water (watershed function).

- Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Objective

To manage watersheds that display physical and biological conditions or functions required for necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to watershed management also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Watershed Management Actions. Under the Proposed RMP, attainment of a functioning watershed through watershed restoration would be accelerated substantially and the area planned for treatment would be based on the ranges of healthy conditions and desired vegetation states identified in Section 2.4.5. Total area planned for active vegetation treatment is approximately 7.1 million acres distributed among the various vegetation types over a 50- to 100-year time frame. Upon successful restoration of vegetation communities, additional vegetation could be reserved for watershed protection.

Revegetation success typically is higher in the more mesic, higher elevation vegetation types (e.g., pinyon-juniper, mountain mahogany, and mountain sagebrush). On the other hand, the typical larger watersheds tend to include a higher proportion of low elevation vegetation types such as shadscale and Wyoming sagebrush predominate where soils are drier and revegetation success is less probable. In those vegetation types with the lowest probabilities for successful revegetation (e.g., shadscale and winterfat), treatment techniques involving minimal disturbance, such as changes in livestock grazing, would be favored in most cases other than rehabilitation of wildland fires.

Impacts related to the management actions of the watershed program would relate to the prioritization of watersheds for analysis and treatment and the allocation or additional forage produced on restored areas. Impacts related to prioritization of watersheds are most likely to occur in relation to the deferral of treatment and unexpected changes that may occur in those watersheds considered as lower priority before they undergo analysis and restoration. If unexpected changes are observed in watersheds in the low priority group prior to their scheduled analysis, the Ely Field Office may revise the prioritization list as necessary, based on such data. As indicated above, the greatest potential for increased vegetation production would occur in those areas that have higher probability for revegetation success. The vegetation communities in these areas also typically are those that exhibit higher levels of productivity. Thus, allocation of additional forage following vegetation treatments is most likely to occur in the more mesic, higher elevation vegetation communities.

Impacts from Other Programs.

Vegetation. Under the Proposed RMP, much of the treatment emphasis would focus on treatment of resources at risk of crossing thresholds to tree or shrub states with little or no herbaceous understory. Thus, existing vegetation condition is one of the factors involved in prioritization of watershed for treatments. Sagebrush and pinyon-juniper woodland areas dominated by or containing an understory component of annual invasive species (e.g., cheatgrass) would typically be rehabilitated if and when they burn naturally. With the shift in treatment emphasis and increase in the level of effort involved, the Proposed RMP would produce greater watershed improvements than under current management. This would result in greater productivity, and improved watershed function and stability. It also would increase the amount of plant litter returned to the soil and protect soils from accelerated erosion.

For watersheds, management objectives would be to maintain or establish diversity, mosaics, and connectivity of vegetation communities at a project-level scale. Such scale would vary depending on watershed size. The overall goal of the Proposed RMP would be to emphasize plant and animal community health at the landscape level. To achieve the desired range of conditions, management would include a variety of methods to increase or decrease the vegetation overstory. Application of treatments to the acreages discussed under the Proposed RMP would result in impacts to vegetation communities, both in the short term (where some temporary effects such as increased risk of weed invasion may hamper restoration) and in the long term (where the treatments are expected to result in increased resiliency and improved ecological health). Implementation of the management actions and best management practices would reduce or eliminate some of the impacts to vegetation communities. For example, the highest return on effort is anticipated in treating areas that have not crossed a threshold and where the desired plant community is still present but approaching a threshold (see Appendix C). The short-term impacts associated with restoration efforts would include temporary reduction in vegetation cover and productivity, which could impact other resource programs. Moving these communities to an earlier vegetation phase, however, would provide long-term benefits to other resources and users. Where existing conditions are within the desired range of conditions, vegetation would be managed in a manner to maintain that status.

Fish and Wildlife. Under the Proposed RMP, watershed restoration would be driven, in large part, by wildlife habitat requirements as defined through the desired future conditions. The effects include the designation of specific wildlife habitat needs such as vegetation species, percent cover, timing of treatment activities, and maintenance of vegetation corridors for movement.

Special Status Species. Presence of special status species is one of the primary factors affecting the prioritization of various watersheds for analysis and treatment.

Wild Horses. The reduction in number and distribution of herd management areas associated with this alternative would help alleviate impacts from wild horses on revegetation efforts and watershed treatments, especially in several drier areas of the planning area. This also would favor maintenance or improvement of watershed function in these areas and reduce the potential need for future treatments of the same areas.

Livestock Grazing. The environmental impacts of grazing on watershed function are similar to livestock grazing effects to Vegetation in Section 4.5, Proposed RMP. The grazing actions presented here would lessen the impacts to the resources. For those allotments that have been evaluated, there may be impacts from livestock grazing that would be considered a causal factor for not attaining or making progress toward the rangeland health standard. The ability of a watershed to withstand disturbance and attain resilient and resistant vegetation communities is partly dependent on the intensity of livestock grazing. With more intense livestock management, watershed function would be reached at a faster rate. Grazing animals affect plant communities through herbivory, trampling, and nutrient redistribution. Grazing can stimulate growth in some plants. It also can reduce plant abundance, density, and vigor. Grazing can be used to generate changes in plant community composition, structure, and function. Spatial variations in grazing can influence patterns of the landscape mosaic and dictate when a site switches to an alternative ecological state (crosses a threshold). Approximately 221,300 acres would be unavailable for livestock grazing as shown in **Table 4.16-1**. Throughout the remainder of the planning area, livestock grazing may be used as a tool to affect implementation and success of other vegetation treatments.

Lands and Realty. Additional possible land disposal designations proposed under the Proposed RMP would total approximately 75,600 acres, of which approximately 60 percent would be shrubland. Land disposals could affect vegetation treatments and management on large and small watersheds through increased probability for introduction of weeds from disturbance areas associated with development activities, constraints on use of certain vegetation treatments (e.g., fire) in adjoining lands, and changes in priority of areas to be treated. Potential land disposals would not affect vegetation treatments and vegetation management in watersheds on the remainder of the planning area. Rights-of-way and special uses on the planning area, including communication sites, affect vegetation to the extent that ground disturbances are involved. Consolidation of major rights-of-ways into corridors would limit the amount of surface disturbance to vegetation communities. All permits, leases, and contracts are administered with conservation measures such as topsoil salvage and reclamation of all vegetation disturbed or removed. Thus, most impacts associated with these activities are short term and would be mitigated to the extent practicable through best management practices (see Appendix F, Section 1).

Renewable Energy. Development of renewable energy projects could affect watershed management through increased probability for introduction of weeds from disturbance areas, constraints on use of certain vegetation treatments (e.g., fire) in adjoining lands, and changes in priority of areas to be analyzed and treated. Based on the reasonably foreseeable development scenario, a maximum of 40,000 acres of rights-of-way would be granted and 4,000 acres are expected to be disturbed for construction and operation of renewable energy facilities within the decision area during the life of this plan. This area would include several separate facilities constructed at different times. Thus, the acreage disturbed at any one time and contributing to local erosion and sedimentation would be a small fraction of this total.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (see Section 4.18), would be distributed throughout the 11.5 million acres of the planning area. Mineral development activities may affect the planning and implementation of watershed treatments in terms of either prioritization of or constraints on various treatments.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available) and other tools would be used to the greatest extent practical under the Proposed RMP. During the short term, wildland fire may affect the planning and implementation of treatments within individual watersheds and adjacent areas. In the long term, restoration of vegetation resilience and the return to historical fire regimes and condition classes would result in reduced impacts to watersheds when wildland fires occur.

Noxious and Invasive Weed Management. The management of noxious and invasive weeds is essential for restoration of native plant community health and resiliency. The presence and abundance of noxious and invasive weed populations would be important factors in the planning and implementation of watershed treatments. Management to remove, reduce, and prevent noxious weeds would include the use of chemical, mechanical, biological, and cultural methods. The effects of herbicide use vary with the herbicide used, the application rate, and the proximity of non-target plants to targeted ones. The use of cultural agents (e.g., sheep and goats) to manage noxious weeds would affect native and desirable plants to the degree that non-target species are present in the treatment area and are palatable to animals. These short-term effects would not be expected to interfere with the accomplishment of the watershed management goal.

Special Designations. The Proposed RMP would involve designation of 20 ACECs and management of designated wilderness and wilderness study areas. These special designations have been considered in the prioritization of watersheds for analysis and restoration. It is not expected that these designations would have additional effects on the planned watershed analysis and treatment process in any major way although they may affect selection of areas and methods for local vegetation treatments. In some cases, these designations would augment the watershed treatment and management process by providing additional protection from disturbances.

Conclusion. The Proposed RMP watershed management actions, in combination with the associated vegetation treatment programs, generally would reduce dominance by woody species; increase the diversity of vegetation communities over the long term; and provide structure with multiple-aged shrubs, forbs and perennial grasses. This would result in greater productivity, improved watershed function, and increased stability. It also would increase the amount of plant litter returned to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities, which includes maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained and improved across the landscape except at small localized areas of soil disturbing activities. Thus, the Proposed RMP management actions of this and related programs would achieve the program goal for watershed management.

Alternative A

Impacts from Watershed Management Actions. The management action of the watershed program in this alternative relates to how additional forage produced on restored areas would be allocated among various uses. Within the Schell Resource Area, this distribution is defined by the existing land use plan as 70 percent to livestock and wild horses and 30 percent to wildlife. In other portions of the planning area, allocations could be made among uses and reserved to watershed function, as necessary, for individual treatment areas to meet project objectives. Thus, there is greater flexibility of using the additional forage produced to improve watershed function in the former Egan and Caliente Resource Areas than in the Schell Resource Area.

Impacts from Other Programs.

Under Alternative A, renewable energy, noxious and invasive weeds, and special designation management and the associated impacts would be similar to the Proposed RMP.

Vegetation. Under Alternative A, restoration of watershed function would be through the attainment of the desired range of conditions for vegetation communities. Watershed restoration activities, including analysis, would be undertaken at a relatively low level with a slow rate of associated change. Watershed analysis and associated monitoring currently are implemented as funding opportunities and other resources allow. Within this alternative, the treatment emphasis would continue to occur primarily as fire rehabilitation within the various sagebrush types (see **Maps 4.5-1** and **4.5-2**) with some treatment components in salt desert shrub and nonnative seedings. In the sagebrush areas, the average revegetation success rate is estimated to be about 50 percent. Vegetation treatments within the Mojave Desert portion of the planning area would consist primarily of fire rehabilitation. As with the Proposed RMP, treatment success would be higher in the more mesic, higher elevation vegetation types and lowest in the lowest elevation areas.

Vegetation treatments would continue to be implemented at rates somewhat above the historic rate of approximately 10,000 acres of vegetation manipulation per year. Vegetation treatments would not be concentrated in any watershed. Thus, the effect on any watershed would be small. The majority of activity would continue to be seeding following wildland fires. Considering a total treatment area of almost 2.8 million acres across the Great Basin portion of the planning area, this rate of treatment is not expected to succeed in reestablishing vegetation resiliency.

Fish and Wildlife. Under Alternative A, fish and wildlife needs are a consideration in the establishment of desired range of conditions for vegetation communities and watershed function. Fish and wildlife values and associated habitat requirements are a substantial factor in the planning and prioritization of watershed treatments and the planning of subsequent management.

Special Status Species. None of the proposed management actions regarding special status species are anticipated to affect the watershed program under this alternative. However, future changes in the list of special status species could change watershed priorities, with the restoration of habitat for such species becoming a major factor in determining where watershed restoration occurs.

Wild Horses. Wild horse herds may adversely affect the success of restoration efforts occurring within the herd management areas since it would be difficult, if not impossible, to exclude wild horses from all new seedings. The effect of wild horses on these treatment areas would be most noticeable and negative in marginal herd management areas where inadequate forage sometimes exists to sustain the horse populations.

Lands and Realty. Under this alternative, lands identified for potential disposal total approximately 31,900 acres, primarily within White Pine County. Applicants for major rights-of-way would be encouraged to use existing corridors to limit disturbance. The potential disposals would have minimal effect on the watershed management program.

Livestock Grazing. Through its effects on vegetation, grazing would continue to be used as a tool for meeting standards in watershed management. The specific manner in which livestock grazing would contribute to watershed restoration would be determined during watershed analysis and the allotment evaluation and term permit renewal process.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the

8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP (see Section 4.18). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Fire Management. Under Alternative A, prescribed fire, wildland fire use (approximately 3.6 million acres available) and other tools would not be used to the greatest extent practical as under the Proposed RMP. The impacts under Alternative A would be similar to those under the Proposed RMP except on a smaller scale resulting in fewer acres with improved ecological health, vegetation resilience, and watershed function. Because fuels would continue to accumulate in untreated areas, the probability of major, uncontrollable, stand-replacing fire events impacting the watershed would continue.

Conclusion. Existing management in watershed management, vegetation, and related programs, would lead to minimal improvement at the watershed level, moderate reduction in shrub-dominated communities, and a reduction in pinyon/juniper-dominated communities over the long term. Moderate shrub reintroduction into burned sites, as part of rehabilitation efforts, would maintain diversity in the long term at a broad scale. The historic rate of treatment (largely fire rehabilitation) each year to restore desirable perennial herbaceous species and restore ecological resiliency would be increased to the extent allowed under the current fire plan. This rate, however, is not considered adequate to match the current rate of ecological deterioration, increase in woody fuel, and expansion of weedy species throughout the planning area, and substantial long-term effects on watershed function are anticipated. Thus, the rate of treatment under this alternative, when combined with actions proposed for vegetation, fish and wildlife, special status species, wild horses, livestock grazing, and fire management, has a low probability of achieving noticeable gains in vegetation resiliency and watershed function throughout the planning area and is unlikely to achieve the program goal.

Alternative B

Impacts from Watershed Management Actions. Additional forage produced as a result of vegetation treatments would not be allocated to either livestock or wild horses, but would be used to further improve watershed condition and provide forage for wildlife. This approach would tend to accelerate restoration of watershed function in the treated watersheds.

Impacts from Other Programs.

Under Alternative B, most programs directly affecting watershed function and their associated impacts would be similar to the Proposed RMP.

Vegetation. As with the Proposed RMP, treatment success of the Great Basin vegetation types is expected to be highest in the higher elevation areas occupied by pinyon-juniper and mountain sagebrush and lowest in the lower elevation areas. Under this alternative, the higher proportion of treatment related to vegetation types with higher success probabilities (i.e., pinyon-juniper) would lead to potentially higher overall success rates and greater forage production than Alternative A. Vegetation treatments as well as other treatments designed to restore vegetation resiliency, improve hydrologic function, increase infiltration, and reduce soil erosion would be concentrated within specific watersheds over time.

Livestock Grazing. Livestock grazing would be closed on approximately 3 million acres of bighorn sheep range and 542,100 acres of desert tortoise habitat outside of the desert tortoise ACECs. This would reduce the effect of livestock grazing as a tool in watershed management for these areas.

Conclusion. Alternative B generally would reduce dominance by woody species and increase the diversity of vegetation communities over the long term, providing structure with multiple-aged shrubs, forbs and perennial grasses. This would result in greater productivity, and improved natural functions and watershed stability. Sustained or slightly reduced levels of livestock grazing would maintain vegetation communities that currently meet the desired range of conditions and allow improvement of remaining vegetation communities to the desired range of conditions over the short and long term. It also would increase the amount of plant litter returned to the soil and protect soils from accelerated erosion. Long term vigor and health of vegetation communities, which includes maintenance of soil stability as well as energy, nutrient, and water cycling, would be maintained across the landscape, except at small localized areas of soil disturbing activities. Additional forage resulting on areas successfully restored would not be allocated to livestock or wild horses and, thus, could help in further improvement of ecological health beyond meeting the standards for rangeland health. Overall, the watershed management aspects of this alternative and effects of most other programs would be similar in effect to the Proposed RMP and would be expected to achieve the goal for watershed management.

Alternative C

Impacts from Watershed Management Actions. Additional forage produces as a result of vegetation treatments would be allocated to livestock. Although this allocation assumes that standards for rangeland health have already been met, the allocation to livestock as opposed to watershed maintenance, on at least a partial basis, would probably cause the recovery of watershed function to be slower in this alternative than in the Proposed RMP or Alternative B.

Impacts from Other Programs. Impacts on watershed restoration associated with fish and wildlife, special status species, wild horses, livestock grazing, geology and mineral extraction, noxious and invasive weed management, and special designations management programs would be the same as described for the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. Under Alternative C, attaining watershed function for watersheds through a restoration program involving specific vegetation communities and conditions to be treated would be similar to the Proposed RMP, except for the differences in desired range of conditions identified in Section 2.4.5. This approach would require more frequent future treatments or increased management effort to maintain these commodity-oriented communities. The total area currently estimated for potential treatment in Alternative C is approximately 7.5 million acres or about 66 percent of the total area occupied by those vegetation communities subject to treatment. Slightly over 90 percent of this potential treatment area occurs in the pinyon-juniper and sagebrush vegetation types. The primary difference in restoration approach between Alternative C and the Proposed RMP is that Alternative C would focus on establishment and maintenance of vegetation communities in a narrower desired range of conditions conducive to the commodity (livestock, forest/woodland products, and big game) emphasis of this alternative. Achievement and maintenance of this desired range of conditions would require greater initial effort and more frequent future treatments. Additional forage would be allocated to livestock after Standards for Rangelands health have been met at the watershed level.

Impacts to watershed management resulting from implementing the vegetation treatments of Alternative C would be generally similar to those described for the Proposed RMP, especially in the short term. However, this alternative would involve only limited use of prescribed fire and would rely on more expensive mechanical and chemical approaches for most treatments. Thus, the area successfully treated within comparable budgets would probably be less in Alternative C, eventually leading to substantial differences between the two alternatives over the long term.

Management within the Mojave Desert and salt desert shrub vegetation types would focus on restoration of healthy ecological systems primarily through application of herbicides on sites infested with annual invasive species and through changes in grazing management to maximize opportunities for natural recovery. Prescribed fire and other tools also would be used where appropriate in these vegetation types.

Lands and Realty. Potential land disposals would total approximately 295,200 acres, about two-thirds of which would be in Lincoln County. Several of the utility corridors under this alternative would be up to 3 miles in width, resulting in over 1.0 million acres of total corridor area (more than three times the potential corridor area under the Proposed RMP).

Fire Management. The full suppression approach to fire management in Alternative C would contribute to the continued accumulation of heavy fuels in untreated areas rendering them more vulnerable to large, intense fires if and when they eventually burn. Restoration of these areas would then be more difficult than if treated or burned in the absence of such heavy fuel loads.

Conclusion. Implementation of this alternative would reduce dominance of woody and exotic annual species, and increase dominance of herbaceous perennials in the long term. Greater productivity for allocation to consumptive uses would result. Limited shrub reintroduction into some burns would maintain diversity at a broad scale. However, the narrower range of desired conditions (with greater emphasis on the herbaceous state) in this alternative as compared to the Proposed RMP would require more effort and more frequent treatments to achieve and maintain. The higher probability for widespread fire over the long term also would necessitate greater efforts for fire suppression and rehabilitation as opposed to planned treatments. As a result of optimizing livestock use of available forage, the benefits of returning vegetation material to the soil would be minimized. Long term vigor and health of vegetation communities would be maintained across the landscape, except at localized areas of concentrated activity. This alternative would have a good probability of achieving the program goal, but the probability would be less than for the Proposed RMP or Alternative B.

Alternative D

Impacts from Watershed Management Actions. This alternative would be similar to Alternative A in terms of attaining functionality of watersheds based on the anticipated scale of watershed treatments. However, Alternative D would focus on minimal restoration disturbance, elimination of grazing, use of fewer herbicides, and elimination of all discretionary uses or developments on the public lands. Additional forage produced on treated areas would be available for wildlife, wild horses, and watershed maintenance since no livestock would be present. In areas outside of the herd management areas, this would facilitate restoration of watershed function.

Impacts from Other Programs. Impacts on watershed restoration associated with fish and wildlife, and special designations management activities would be the same as described for Alternative A. The following interrelated programs would result in different impacts compared to Alternative A.

Vegetation. Under this alternative, much of the treatment emphasis would focus on treatment of sites that have understory vegetation dominated by invasive species. This alternative is expected to produce comparable vegetation restoration to Alternative A on individual treated areas, but the focus would be on restoration of native species, not necessarily resilient conditions. To accomplish the desired range of conditions for this alternative as described in Section 2.8, restoration of native plant communities would emphasize replacement of nonnative plants such as cheatgrass and crested wheatgrass with perennial bunchgrasses, primarily within the Great Basin portion of the planning area. Restoration of native plant communities would involve maintenance of the current distribution of species. Areas where sagebrush was previously removed would be revegetated with sagebrush, and similarly, pinyon and juniper would be restored on sites where trees have been removed.

This approach would manage public land to achieve no net loss of native communities, as they currently exist or existed about 1950 prior to widespread shrub and tree removal for enhanced forage production. Therefore, in the short term, vegetation conditions would continue generally as they currently exist with gradual increases in forage production, vegetation resiliency, and watershed function in some communities through limited restoration; increased accumulation of fuel loads in almost all unburned communities; and replacement of invasive or nonnative species in limited treatment areas.

Special Status Species. The special status species program would have minimal effects in the short term. However, over the long term, the substantially higher risks of large intense fires destroying widespread areas of sagebrush habitat would lead to increased probabilities for additional species listings in this category. Thus, there would be reduced probability of future species listings guiding the watershed management program in the short term and increased probability of such direction over the long term.

Wild Horses. Wild horse populations would be uncontrolled within the herd management areas. This would result in severe impacts to vegetation and watershed health in these areas, creating the need for additional, and probably repeated, treatment.

Lands and Realty. Minimal lands and realty actions would occur under Alternative D and effects to watershed management would be absent.

Renewable Energy. Development of renewable energy facilities would be precluded and there would be no effects of such activities on watershed function or management.

Livestock Grazing. Livestock would be removed from the planning area, eliminating any conflict between grazing activities and watershed management. However, removal of livestock would eliminate one of the major tools used for vegetation treatment.

Geology and Mineral Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario (see Section 4.18). Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Fire Management. Under Alternative D, minimal fire suppression would occur. Decreased fuel reduction by grazing, followed by increased fuel proliferation and reduced fire suppression over the long term would result in substantially increased probabilities that wildland fires would be widespread and high in severity. This would ultimately lead to far larger areas requiring fire rehabilitation and more difficulty restoring these areas than if they had been subjected to planned treatments.

Noxious and Invasive Weed Management. Under Alternative D, the removal of cheatgrass without the use of acetolactate synthesis-inhibiting herbicides, which would be prohibited under this alternative, would be less practical and probably less effective.

Conclusion. Improvement in watershed function could be seen with the exclusion of livestock from all public lands and would allow natural succession to improve the condition of many vegetation communities currently supporting desirable species. Altered vegetation communities dominated by annual species would improve little toward the desired range of conditions over the life of the plan. Fine fuels would increase with limited utilization of herbaceous growth, resulting in increased size of wildland fires and increased frequency of fire. Limited suppression of wildland fire also would increase the average fire size, resulting in more frequent impacts to affected vegetation resources. The condition of many vegetation communities currently dominated by desirable mosaics of native species would be maintained or improved in those areas not subject to frequent fire. Intense, hot, wildland fires in healthy, native communities would cause a decline in vegetation diversity and health, leading to a decline in natural levels of nutrients, water, and energy cycling.

The limited management approach would result in continued proliferation of tree species into historic sagebrush-dominated sites with minimal prospects for restoration of resiliency and watershed function.

Treatments would not occur at a scale and rate, when combined with the actions proposed for vegetation, fish and wildlife, special status species, wild horses, livestock grazing, and fire management, which would reverse the historic deterioration in rangeland health and restore resiliency of vegetation communities. The long-term consequences would be more dramatic and severe than in other alternatives due to the differences in fire management and other programs. Therefore, the watershed management actions, in combination with the related programs of this alternative, would fail to meet the program goal.

4.20 Fire Management

Impact Issues

Wildland Fire
Photo by Sue Howle

Restoration of natural fire regimes is a primary long-term goal of the Ely Field Office fire management program. Restoration of natural fire regimes is hindered by profound ecological system changes that have altered and continue to affect fuel amounts, types, and distribution. Fuels management, mainly through vegetation modification, is central to the achievement of this goal.

Assumptions for Analysis

- Natural ignition events would continue to occur in approximately the same distribution and frequency as observed in the past.
- Frequency of human-caused accidental ignitions would increase almost proportionately over time as recreational use increases along transportation corridors and as newly disposed lands are developed.

Interactions with Other Programs

The fire management program within the planning area potentially would be affected by actions within the resource management programs for vegetation, special status species, cultural resources lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, forest/woodland and other plant products, geology and mineral extraction, noxious and invasive weed management, and special designations.

Goal

Provide an appropriate management response to all wildland fires, with emphasis on firefighter and public safety, consistent with overall management objectives. Return fire to its natural role in the ecological system and implement fuels treatments, where applicable, to aid in returning fire to the ecological system. Establish a community education program that includes fuels reduction within the wildland urban interface to create fire-safe communities.

Objective

To manage wildland and prescribed fires as one of the tools in the treatment of vegetation communities and watersheds to achieve the desired range of condition for vegetation, watersheds, and other resource programs (e.g., livestock, wild horses, soils, etc.).

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to fire management also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Fire Management Actions. Implementation of the Proposed RMP would result in fire management activities (appropriate management response, prescribed fire, and/or mechanical, manual and herbicide application, etc.) occurring year-round to meet resource objectives in accordance with the Ely Fire Management Plan (BLM 2004a), subsequent updates and the goals and objectives of this RMP. Fire management activities would be conducted on watersheds with resilient vegetation, to aid in achieving and maintaining resilience of vegetation. Up to 8.9 million acres may become available for wildland fire use.

Adherence to provisions of the Nevada Smoke Management program will minimize air quality impacts related to prescribed fires. Coordination with the Department of Defense will minimize the safety hazards of prescribed fires in relation to military operating air spaces within the planning area.

Management actions related to desert tortoise habitat will ensure that the fire management program has minimal adverse effects on desert tortoise populations.

Impacts from Other Programs.

Vegetation. Under the Proposed RMP, vegetation treatments, including fuel reductions, would be increased substantially from current levels. Much of this restoration effort would be accomplished through the use of prescribed fire and wildland fire use, as well as the use of mechanical and chemical treatments. Thus, the vegetation program would provide the basis for a substantially increased effort in fire management, particularly in relation to fire use and prescribed burns.

Special Status Species. Fire management activities (i.e., suppression, wildland fire use, prescribed fire) within the planning area would be influenced by constraints to protect and conserve habitat for special status species. For example, several specific and unique operational constraints are identified in Section 2.4.20 for fire suppression activities within desert tortoise habitat (approximately 746,000 acres or 6.5 percent of the decision area).

Cultural Resources. Fire management planning activities would consider the presence of cultural resources, and plans would be modified or areas closed to fire management activities as necessary to avoid impacts to cultural resources.

Lands and Realty. Under the Proposed RMP, an increased area would be designated for possible disposal primarily for community development. Commonly, development can lead to increased ignition sources from human activities and, therefore, potentially increased fire risk on adjacent public lands. In the long term, increases in community development and other developments (e.g., rights-of-ways and communication sites) would lead to an increased need for Wildland Urban Interface Projects along with increased fire suppression responses.

Renewable Energy. Renewable energy development (up to 40,000 acres for wind energy) would likely lead to increased development of rights-of-way access to such areas, which may affect fire management in the same manner as discussed under Lands and Realty. In the long term, increases in community development and other developments (e.g., rights-of-ways and communication sites) would lead to an increased need for Wildland Urban Interface Projects along with increased fire suppression responses.

Travel Management and Off-highway Vehicle Use. Off-highway vehicle use would be limited to designated road and trails as determined through a subsequent public process and area-specific analysis, thereby reducing the risk of ignition sources in remote areas of the planning area.

Recreation. The Proposed RMP includes designation of five special recreation management areas totaling approximately 1.2 million acres. This decision, coupled with the changes in off-highway vehicle use policies discussed above, would tend to reduce the risk of human-caused fires in remote areas of the planning area while increasing the risk in these designated areas. Competitive events are short in duration and permit conditions would include fire prevention measures.

Forest/Woodland and Other Plant Products. Fuelwood activities would occur throughout the planning area, except in restricted areas, under the Proposed RMP, which could potentially increase the number of dispersed ignition sources on the planning area. Harvest also may be encouraged in specific areas to create fire breaks.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (see Section 4.18), would be distributed throughout the 11.5 million acres of the planning area. The effects of geology and mineral extraction activities on fire management would be similar to those discussed for lands and realty and travel and off-highway vehicle use. Increased risk of fire associated with mineral development activities would be addressed through increased readiness for suppression development potential.

Noxious and Invasive Weed Management. Noxious and invasive weeds would continue to affect fire behavior, frequency, and post-fire effects. As noxious and invasive plants dominate plant communities, fuels increase locally. For example, cheatgrass is highly flammable when cured and generates fires that burn frequently and rapidly. The resulting fire behavior dictates appropriate management and fire fighter capabilities. Thus, weeds may limit the appropriate tools regarding fire management actions.

Special Designations. Implementation of the Proposed RMP would retain or designate 20 ACECs for approximately 317,790 acres throughout the decision area. Designation of these ACECs may affect decisions regarding fire management in or near these areas. Ten of the ACECs consisting of approximately 20 percent of the total area in ACECs would be classified as open for fire management. This means that the full range of fire management options (wildland fire use, prescribed fire, mechanical treatments, etc.) could be used within these ACECs without potential restrictions. Ten of the ACECs containing approximately 80 percent of the area within ACECs would be classified as limited for fire management. This means that the full range of fire management options (wildland fire use, prescribed fire, mechanical treatments, etc.) could have restrictions placed or be eliminated from use within these ACECs.

Conclusion. Implementation of the Proposed RMP would result in a major increase in the use of fire throughout the watersheds in the planning area. Fire use and prescribed fire would be implemented year-round in the treatment of vegetation communities and watersheds to achieve the desired range of conditions for vegetation, watersheds, and other resource programs (e.g., livestock grazing, wild horses, soils, etc.). An increase in application of other tools (e.g., herbicides) also may be necessary to meet management goals prior to expanding the use of fire.

Alternative A

Impacts from Fire Management Actions. The Ely Fire Management Plan, which incorporates the Ely Managed Natural and Prescribed Fire Plan, would continue to be implemented (see **Map 2.5.20-1**). This plan has been in effect for several years and would continue to provide effective guidance for responding to and managing wildland fires. This plan would allow fire use fires on approximately 3.6 million acres of the 11.5 million acres in the decision area. This is less than the Proposed RMP and could contribute to continued accumulation of woody fuels in untreated and unburned areas, increasing the risk for eventual large scale wildland fires that not only cause ecological damage but also jeopardize human safety and property. Fire suppression costs associated with Alternative A would be higher than fire suppression costs associated with the Proposed RMP.

Impacts from Other Programs. Impacts to fire management associated with special status species and cultural resources would be the same as discussed for the Proposed RMP.

Vegetation. Impacts under Alternative A are similar to those under the Proposed RMP except on a smaller scale. Thus, the vegetation program would not provide as much of a basis for the fire management program.

Lands and Realty. Impacts of lands and realty to fire management would be similar to those discussed for the Proposed RMP, except they would occur on a smaller scale due to the smaller acreage involved for disposals, corridors, and other authorizations.

Renewable Energy. Under Alternative A, applications for alternative energy sources would continue to be reviewed and approved on a location-by-location basis. This policy has minimal effect, either beneficial or adverse, on fire management. The same general effects would apply as for the Proposed RMP.

Travel Management and Off-highway Vehicle Use. Roads provide access to areas whereby the risk of human-caused fire ignition increases in those areas; however, the same access is afforded to fire fighters for suppressing human- or natural-caused fires. The Ely Field Office policy of allowing off-road travel, and the resulting proliferation of roads, would continue to result in both potential ignition sources as well as access for fire fighters.

Recreation. Recreational activities that occur on the planning area inherently increase the risk of human-caused fire due to the common outdoor use of lighters, campfires, vehicles, and cook stoves. The risk of recreation-related ignitions would be highest around human concentration areas such as planning campgrounds and hunting camps. Only 750,000 acres of special recreation management area would be retrained. This area along U.S. Highway 50 is not expected to increase fire ignitions.

Forest/Woodland and Other Plant Products. Forest/woodland and other plant product harvesting affects fuels both positively and negatively. Of the permitted activities, green tree harvesting for fuelwood or posts and poles would reduce and redistribute the greatest amounts of fuel. This break-up of fuel continuity would have a desirable effect for fire management. Tree harvesting, however, generates woody debris (slash). Slash left on the ground increases fire hazards in the short term, depending on the slash treatment method. Collection of dead and down wood for fuelwood would reduce the hazard level for medium to large size woody materials on a very localized basis.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP (see Section 4.18). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Noxious and Invasive Weed Management. Noxious and invasive weeds would continue to affect fire behavior and frequency. As noxious and invasive plants dominate plant communities, fuels increase locally. Cheatgrass is highly flammable when cured and generates fires that burn frequently and rapidly. The resulting fire behavior dictates appropriate management and fire fighter capabilities.

The treatment or removal of noxious and invasive weeds on the planning area would affect fuels available for fire; however, this change is highly localized and operates on a spatial and temporal scale different than fire. Noxious weed treatment under Alternative A would be concentrated along roads, which are useful as fuelbreaks during suppression activities. Treating roadside weeds would consequently help maintain existing roadways as fuel breaks and decrease the spread of weeds into new undisturbed areas.

Special Designations. Existing management would continue to require designated wilderness classifications to be considered during development of appropriate fire management response. Only the three existing desert tortoise ACECs would be designated under this alternative, resulting in fewer acres with fire management constraints than under the Proposed RMP.

Conclusion. Continued implementation of the Ely Fire Management Plan, which incorporates the Ely Managed Natural and Prescribed Fire Plan, would allow case-by-case decisions based in part on where the fire occurs in relation to where in the planning area such fire would be considered beneficial or detrimental.

Alternative B

Impacts from Fire Management Actions. Impacts to fire management associated with program-specific management activities would be the same as the Proposed RMP. Fire suppression costs associated with Alternative B would be less than fire suppression costs associated with Alternative A, C, or D, but higher than fire suppression costs associated with the Proposed RMP.

Impacts from Other Programs. Impacts to fire management associated with vegetation, special status species, cultural resources, renewable energy, travel management and off-highway vehicle use, forest/woodland and other plant products, geology and mineral extraction, and noxious and invasive weed management activities would be the same as or similar to the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Lands and Realty. Under Alternative B, an increased area would be designated for possible disposal primarily for community development. Commonly, development can lead to increased ignition sources from human activities and therefore potentially increased fire risk on adjacent public lands.

Recreation. Alternative B includes designation of nine special recreation management areas totaling approximately 2.7 million acres. This decision, coupled with the changes in off-highway vehicle use policies discussed above, would tend to reduce the risk of human-caused fires in remote areas of the planning area while increasing the risk in these designated areas.

Special Designations. Impacts to fire management associated with special designations would be similar to the Proposed RMP. Designation of 18 ACECs may affect decisions regarding fire management in or near these areas.

Conclusion. Implementation would result in a major increase in the use of fire throughout the watersheds in the planning area. Fire use and prescribed fire would be implemented year-round to meet resource objectives in accordance with the Ely Fire Management Plan (BLM 2004a), thus meeting the goal for this management program. An increase in application of other tools (e.g., herbicides) also may be necessary to meet management goals prior to expanding the use of fire.

Alternative C

Impacts from Fire Management Actions. Fire management would focus on full suppression throughout the planning area. This approach is expected to result in continued accumulation of heavy fuel supplies in untreated sagebrush and forest/woodland communities until natural ignition occurs in these areas. At that point, suppression and control of the resulting fires may be difficult, if not impossible. Thus, over the long term, this approach would lead to increased risk of eventual large scale wildland fires that would cause ecological damage and jeopardize human safety and property. Fire suppression costs associated with Alternative C would be higher than fire suppression costs associated with the Proposed RMP.

Impacts from Other Programs. Impacts to fire management associated with vegetation, special status species, cultural resources, lands and realty, renewable energy, forest/woodland and other plant products, geology and mineral extraction, noxious and invasive weed management activities, and special designations would be the same as or similar to the Proposed RMP. The following interrelated program would result in different impacts.

Travel Management and Off-highway Vehicle Use. Approximately 32,000 acres would be classified as open to cross-country off-highway vehicle use under Alternative C. These areas are all within dry lake beds and should pose minimal threat for fire ignitions.

Recreation. Alternative C includes designation of nine special recreation management areas totaling approximately 2.6 million acres. These areas, like the off-highway vehicle emphasis areas, involve an increased risk of human-caused fire ignitions, but the increased risk in these concentrated use areas tends to be offset by the reduction in risk in remote areas of the planning area closed to such activities. Alternative C includes designation of approximately 1.1 million acres for off-highway vehicle emphasis areas, carrying with it associated risks for human-caused fire ignitions. This is a substantially larger area designated for such use than in the Proposed RMP.

Conclusion. Full suppression of fires within the planning area would be practical only on a short-term basis. Over the long term, the attempts at full suppression would probably lead to catastrophic widespread fires resulting in long-term ecological damage and increased risk to human safety and property. Thus, this alternative would fail to meet the stated goal and objective for the fire management program.

Alternative D

Impacts from Fire Management Actions. Alternative D would emphasize minimal suppression of wildland fires except for human-caused and those that threaten life or property. This approach would result in increased average size of fires and greater areas being rehabilitated on an annual basis. The relative absence of vegetation treatments in sagebrush and forest/woodland communities and the absence of grazing would lead to continued accumulation of both heavy and fine fuels followed by eventual large-scale fire events that would have a high risk of causing ecological damage and jeopardizing human safety and property. Long-term fire suppression costs associated with Alternative D would be higher than long-term fire suppression costs for the Proposed RMP.

Impacts from Other Programs. Impacts to fire management associated with special status species, cultural resources, and watershed management activities would be the same as or similar to the Proposed RMP. The following interrelated programs would result in different impacts.

Vegetation. Restoration would occur at low levels, and the untreated vegetation communities would continue to accumulate live and dead fuels. Pinyon-juniper woodlands, in particular, would continue to accumulate woody fuels that would contribute to increased fire hazards.

Lands and Realty. There would be no net loss of public land under Alternative D, nor would there be any new land use authorizations such as new rights-of-way. This would serve to reduce ignition sources from human activity.

Renewable Energy. Renewable energy development would be severely curtailed due to the elimination of new land use authorizations. This would have a similar impact as that for Lands and Realty under this alternative.

Travel Management and Off-highway Vehicle Use. Alternative D would restrict off-highway vehicle use to maintained roads and trails throughout the decision area, and there would be no off-road open areas. Roads and trails not mechanically maintained would be rehabilitated. This approach would substantially reduce the risks associated with human-caused fire ignitions throughout much of the planning area but also would reduce access for responding to fires.

Recreation. There would be no Special Recreation Permits issued including outfitter and guide permits, motorcycle race events, and truck race events. As with the off-highway vehicle policy above, this would reduce the risk of human-caused fire ignitions.

Forest/Woodland and Other Plant Products. Harvest of forest/woodland and other plant products would be restricted to small quantities of pinyon pine nuts. This would reduce the potential risk of ignition sources associated with most harvest activities in other alternatives, but also would contribute to greater fuel accumulations in these woodland areas and potentially result in larger eventual fires.

Geology and Minerals Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario (see Section 4.18). Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Noxious and Invasive Weed Management. Alternative D would prohibit the use of selected categories of herbicides. This restriction would seriously hamper efforts to control some invasive weeds in numerous settings where they provide a fine fuel supply and contribute to fire susceptibility.

Conclusion. Buildup of fuels would occur throughout the planning area and eventually lead to catastrophic fires, resulting in long-term ecological damage and increased risk to human safety and property. It is expected that such fires would occur earlier in time with this alternative than with Alternative C. Thus, this alternative would fail to meet the stated goal and objective for the fire management program.

4.21 Noxious and Invasive Weed Management

Impact Issues

Noxious and invasive weed introduction and spread generally are functions of vectors (e.g., animals, wind, and vehicles) that transport plant material to and within the planning area and of ground disturbances that promote their establishment. The establishment and spread of noxious and invasive weeds results in the disruption of natural ecological systems. The control of noxious and invasive weeds is dependant on the identification and implementation of appropriate monitoring and treatment methods.

Please refer to Section 4.5, Vegetation, for general impacts from vegetation tools and techniques. Tools and techniques that may affect the potential invasion, establishment, expansion, and control of noxious and invasive weeds include fire, mechanical and chemical treatments, grazing management, and biological agents.

Assumptions for Analysis

- Noxious weed management would continue to operate in concert with, but independent of, watershed restoration priorities.

Interactions with Other Programs

The noxious weeds management program within the planning area potentially would be affected by actions within the resource management programs for vegetation, special status species, wild horses, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, fire management, special designations, and health and safety.

Goal

Prevent the introduction and spread of noxious and invasive weeds. Control or eradicate existing populations.

Objective

To reduce the introduction of, and the areal extent of noxious and invasive weed populations and the spread of these populations.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to noxious and invasive weed management also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Noxious and Invasive Weed Management Actions. The majority of the existing management actions and best management practices address noxious weed prevention for all activities on the planning area, although some are focused on program-specific activities. Prevention emphasis currently is placed on reducing weed vectors (e.g., vehicles and equipment) and on post-disturbance monitoring and revegetation. All seed mixes, mulches, topsoil, and hay used in revegetation projects on the planning area are required to be weed-free. Although it is impossible to prevent all noxious and invasive weed species from entering and spreading on the planning area, these measures are expected to continue to substantially reduce weed vectors.

Maintenance or, if necessary, re-establishment of desired vegetation in resilient plant communities is the primary means of preventing weed establishment following disturbance. Revegetation currently is conducted with native and nonnative species following ground disturbing activities throughout the planning area, except in designated wilderness and wilderness study areas, where native species are preferred. Most efforts for revegetation involve seeding. Success rate, in part, is a function of monitoring revegetation efforts to determine the need for re-treatment.

Treatment methods for noxious and invasive weed control include chemical, mechanical, cultural, or biological. However, other tools may be used to achieve site-specific resource objectives. Existing management actions, best management practices, and tools and techniques address use of herbicides, livestock (e.g., sheep, goats), and biological organisms (e.g., insects, pathogens) to manage weed infestations. Under the Proposed RMP, emphasis would continue to be placed on reducing weed vectors and treating weed infestations associated with roads where weed introduction, establishment risks, potential for additional spread, and existing problems are highest. Isolated weed occurrences would continue to have the potential to spread unchecked. Overall weed control costs under the Proposed RMP are expected to increase during the short term along with the increase in vegetation treatments. These costs would then stabilize and diminish over the long term as resilient perennial vegetation is reestablished in the treated areas.

Impacts from Other Programs.

Vegetation. Under the Proposed RMP, there would be a potential for a substantial increase in ground disturbing activities from current levels associated with vegetation treatments. This would correspondingly increase the risk of weed spread on the planning area over current levels in association with vegetation treatments. Priorities for active management of vegetation would include an array of vegetation communities identified in Section 2.4.5 where existing conditions do not meet the desired range of conditions. Disturbance of existing vegetation to implement treatments carries with it the risk for additional weed spread if the treatment is not successful. Risk of weed invasion would be reduced on treated areas where resilient vegetation is successfully reestablished.

Special Status Species. Management of specific areas for special status species may restrict the tools used in management of noxious and invasive weeds (e.g., use of pesticides near streams or sensitive special status plant species). These conflicts would be identified and resolved on a case-by-case basis.

Wild Horses. The Proposed RMP would result in elimination of several herd management areas totaling approximately 1.6 million acres that do not provide suitable or adequate habitat to sustain wild horse populations. This action would contribute to vegetation restoration and reduction in weed risks in these areas.

Lands and Realty. Land use permits and rights-of-way provide areas for weeds to establish and spread. Right-of-way management and other permitted lands actions would continue to be conducted in compliance with the management actions and best management practices of the noxious weed management program. These procedures address noxious weed prevention related to equipment use, ground disturbance, and reclamation at the close of permitted activities. Management actions and best management practices that apply to right-of-way permit holders and others under contract require vehicle wash downs, pre-disturbance surveys, and mitigation, as needed. The implementation of best management practices would minimize potential effects associated with the maintenance of unpaved roads on BLM-administered lands. Concentrating major rights-of-way within corridors and communication facilities at existing sites would lessen the impact and spread of noxious and invasive weeds by applying control to a concentrated area.

Depending on planned use, possible land disposals that may occur have the potential to increase noxious and invasive weeds subsequent to change in ownership. For example, if disposed parcels were developed subsequent to leaving public domain and the disposed parcel is adjacent to other public land, the risk of noxious weed establishment and spread may increase on the planning area, depending on the type of development involved.

Renewable Energy. Effects would be similar to lands and realty for areas disturbed in conjunction with renewable energy developments and associated rights-of way. Impacts associated with these activities would be mitigated to the extent practicable through management practices from the Wind Energy Programmatic EIS.

Travel Management and Off-highway Vehicle Use. Road construction, use, abandonment, and maintenance activities all have the potential to transport and proliferate noxious and invasive weeds. Roads are continually disturbed ground surfaces with enhanced water runoff on the adjacent roadsides, both conditions that favor the establishment of weeds. Personal vehicles that use the roads in the planning area can introduce plant materials from elsewhere, thereby increasing the distribution of noxious and invasive weeds and introduction of new weed species. Off-highway vehicle use would be limited to designated roads and trails on approximately 10.3 million acres, as determined through a subsequent public process and area-specific analysis, and closed on the remaining approximately 1.2 million acres. This would result in lower risks for weed dispersal through movement of vehicles through infected areas.

Recreation. All developed and dispersed recreational facilities are vulnerable to the introduction and spread of noxious and invasive weeds because of public access via vehicle, the use of pack animals, and the concentration of impacts on the ground. The Proposed RMP includes the designation of five special recreation management areas totaling approximately 1.2 million acres and four special recreation permit areas for competitive events totaling approximately 1.3 million acres. These areas would be particularly vulnerable to introduction and spread of invasive species. Potential impacts associated with outfitters, guides, and recreationists using horses, llamas, or other stock would be minimized because only certified weed-free hay would be allowed to be brought onto public lands.

Livestock Grazing. Livestock grazing is managed to achieve or maintain appropriate rangeland health standards. Typically, rangelands that are in good ecological health are less vulnerable to weed establishment than poor or degraded conditions. Livestock moving from infested areas on private lands to public land allotments can be a major vector for weed seeds.

On all actively grazed allotments, regardless of animal class or numbers, there are animal concentration areas that receive the greatest impacts. Heavily impacted and newly disturbed areas associated with water sources, salt sites, traps, fence lines, range improvements and sheep bedding grounds would remain highly vulnerable to weed establishment. In addition, livestock can transport noxious and invasive weed propagules (e.g., seed and plant parts) into these areas. These hazards and risks would continue at levels dictated by the implementation of best management practices such as monitoring high-risk areas.

Livestock can adversely affect revegetation efforts that are essential to preventing weeds from establishing on recently disturbed areas though trampling and grazing of young plants. For this reason, livestock typically would be excluded from seeded areas until objectives have been met.

No domestic sheep or goat grazing would be allowed within occupied desert bighorn sheep habitat and associated buffer zone except where natural or man-made barriers effectively prevent physical contact. This approach would eliminate the use of domestic sheep or goats for weed control and eradication in such areas and may necessitate greater use of herbicides for such purposes.

Forest/Woodland and Other Plant Products. Forest/woodland products are available across the majority of the planning area. The potential for the spread of noxious and invasive weeds from harvest activities is low to moderate. Stipulations will be included in contracts to reduce potential for spread. Monitoring for weeds during watershed analyses and project planning will be a priority.

Geology and Mineral Extraction. Approximately 17,100 acres, as estimated in the reasonably foreseeable development scenario (see Section 4.18), would be distributed throughout the 11.5 million acres of the planning area. Road construction, use, abandonment, and maintenance related to mineral development all provide the potential to transport and proliferate weeds. Mineral operations would be conducted in compliance with best management practices, thereby minimizing weed-related impacts. These best management practices address noxious weed prevention related to equipment use, ground disturbance, and reclamation at the close of exploration, construction, and operation of permitted activities.

The level of risk associated with minerals development is roughly proportional to the level of development. Under this alternative, the current low levels of mineral development would continue to pose moderate to low levels of risk for the introduction and spread of noxious and invasive weeds depending on compliance with leases, permits, and the best management practices contained in them. The greatest risks would be associated with new road construction that penetrates into currently roadless areas.

Fire Management. Prescribed fire, wildland fire use (approximately 8.9 million acres available), and other tools would be used to the greatest extent practical under the Proposed RMP. This would increase the probability for noxious and invasive species expansion and establishment in burned areas if revegetation efforts fail and weed control measures prove ineffective in the short and long term. However, if native vegetation becomes reestablished in burned areas, the resiliency of vegetation to future fires would minimize the likelihood of expansion and establishment of noxious and invasive weed species within new areas.

Special Designations. Actions to nominate and designate special management areas do not directly affect noxious weed management; however, management plans for these areas that attract recreation or exclude mineral entry can have negative or positive weed-related effects.

Health and Safety. Health and safety precautions would continue to be implemented through best management practices, primarily during weed treatment with herbicide. These precautions would not conflict with the treatment of noxious and invasive weeds on the planning area.

Conclusion. The Proposed RMP would involve a substantial increase in vegetation treatments resulting in a temporary increase in the risk of weed invasion and expansion in the areas disturbed by treatments, but a long-term reduction in the vulnerability of these same areas. Additional constraints on off-highway vehicle use throughout the planning area and formalization of weed management actions related to construction and development activities would substantially reduce weed dispersal associated with these activities. However, with the increase in use of off-highway vehicles in designated special recreation management areas and special recreation permit areas, the potential spread of weeds will increase. Monitoring measures will be implemented to ensure containment of any outbreak. Therefore, this alternative would reduce the rate of spread of noxious and invasive weeds on a long-term basis and meet the program goal.

Alternative A

Impacts from Noxious and Invasive Weed Management Actions. Noxious and invasive weed impacts associated with program-specific management activities would be the same as described for the Proposed RMP. Overall weed control costs would continue at current levels over the short term and would likely continue to escalate over the long term.

Impacts from Other Programs. Noxious and invasive weed impacts associated with special status species, renewable energy, and health and safety activities would be the same as or similar to the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Vegetation. Vegetation treatments can introduce or proliferate weeds as a function of ground disturbances. An average of 10,000 acres per year typically would be treated. Any of these areas with ground disturbance or new roads would be highly vulnerable to weed establishment. Although the short-term vulnerability to weed establishment would increase during and immediately following the treatment activity, this would be more than offset by the reduced vulnerability of the resultant perennial communities to new weed infestations.

Revegetation would minimize the potential establishment and spread of noxious and invasive weeds by stabilizing soils and establishing groundcover; however, seeding also could be a vector for weed introduction. Weed-free seed and straw mulch, where used, would be required for revegetation efforts, precluding this threat to the extent that such seed and straw are available and used. Implementation of the other standard operating procedures listed under Noxious and Invasive Weed Management in Appendix J of the Draft Ely RMP/EIS (July 2005) would minimize potential for introduction and spread of these species.

Wild Horses. Wild horses currently affect noxious and invasive weed management primarily through their impacts on rangeland health. Excessive use in riparian areas and other concentration sites contribute to the vulnerability of these areas to weed invasion. Wild horses are not as likely to transport weeds from distant places as often as cattle and sheep that may be trucked from one area to another.

Lands and Realty. Noxious and invasive weed impacts associated with lands and realty management activities would be the same as described for the Proposed RMP except that the total area available for possible disposal would be substantially less.

Travel and Off-highway Vehicle Use. The majority of the decision area (9.8 million acres) would continue to be open for off-highway travel. As a result, the potential for introduction and spread of noxious and invasive weeds beyond existing roads and trails and into unroaded areas would continue. This could be partially minimized through the consideration of off-road closures in weed-infested areas.

Recreation. No additional special recreation management areas or special recreation permit areas would be designated, and dispersed recreation would continue to be heavy and increase rapidly throughout much of the planning area. This, coupled with the “open” approach for recreational off-highway vehicle use, would contribute to the spread of noxious and invasive species.

Livestock Grazing. Under Alternative A, impacts of livestock grazing on noxious weed management would be similar to the Proposed RMP except that this alternative would not involve the closure of sheep and goat grazing in and near occupied desert bighorn sheep habitat. Therefore, this alternative could involve higher risk of weed invasion and spread on those areas than under the Proposed RMP, but also would allow the use of such animals for selective biological control of various weed species in these areas.

Forest/Woodland and Other Plant Products. Public and commercial fuelwood, post and pole, pinyon pine nut harvest, and Christmas tree cutting activities would be allowed throughout the planning area with few exceptions. Combined with the largely open transportation policy on the planning area, off-road travel and the ultimate establishment of two-track trails that become roads could be associated with the forest/woodland and other plant products program. Due to the broad area open to these public activities, any resulting establishment of noxious or invasive weed populations could quickly lead to widespread dispersal of such species.

Geology and Mineral Extraction. The area available for development of solid leasable minerals, locatable minerals and mineral materials would be relatively similar to that in the Proposed RMP. However, approximately 4 million acres are presently available for oil and gas leasing in contrast to approximately 10 million acres in the Proposed RMP. Therefore, it is expected that only 40 percent (3,400 acres) of the 8,400 acres estimated in the reasonably foreseeable development scenario for oil and gas would be disturbed.

Overall, the total disturbance from mineral development actions would be approximately 12,100 acres in Alternative A in contrast to the 17,100 acres in the reasonably foreseeable development scenario for the Proposed RMP (see Section 4.18). The impacts from development of solid leasable minerals, locatable minerals, and mineral materials would be approximately the same in Alternative A as those described in the Proposed RMP, but much less for oil and gas development.

Fire Management. Impacts of fire management would be the same as the Proposed RMP, except that wildland fire use would be allowed on 3.6 million acres, approximately half of what is available in the Proposed RMP.

Of greatest concern is the relationship between the nonnative, invasive, annual grasses and forbs, and fire. For example, cheatgrass, other annual bromes of Mediterranean origin, and several annual forbs are adapted to fire and proliferate to become a monocultural cover wherever bare ground allows. Management of fire under this alternative would take cheatgrass abundance into account (based on available information), whenever practical; however, cheatgrass would continue to spread following fires.

Special Designations. Impacts associated with special designations would be similar to the Proposed RMP although the total number of new ACECs and their acreages would be less than in the Proposed RMP.

Conclusion. Weed control efforts historically have focused primarily on toxic and noxious weed species with less attention devoted toward the spread of annual invasive species such as cheatgrass, which provide usable forage during a short grazing season each spring. Current management includes emphasis on slowing and reversing the spread of these invasive species through application of integrated pest management methods. The rapidly increasing levels of recreational activities throughout the planning area contribute to the increasing spread of noxious and invasive species. Under this alternative, the rate of spread of noxious and invasive weeds would increase in both the short and long term, thus failing to meet the program goal.

Alternative B

Impacts from Noxious and Invasive Weed Management Actions. Noxious and invasive weed impacts associated with program-specific management activities would be the same as described for the Proposed RMP. Overall weed control costs are expected to increase in the short term during the period of increased vegetation treatments and then stabilize and diminish over the long term as resilient perennial vegetation is reestablished on treated areas.

Impacts from Other Programs. Noxious and invasive weed impacts associated with vegetation, special status species, wild horses, lands and realty, renewable energy, travel management and off-highway vehicle use, geology and mineral extraction, watershed management, fire management, forest/woodland and other plant products, and health and safety activities would be the same as or similar to the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Recreation. This alternative includes the designation of nine special recreation management areas totaling approximately 2.7 million acres and two special recreation permit areas for competitive events totaling approximately 656,000 acres. Three of the nine special recreation management areas would emphasize recreational use of off-highway vehicles. These areas would be particularly vulnerable to introduction and spread of invasive species.

Livestock Grazing. This alternative includes elimination of livestock grazing from the remainder of the Mojave Desert (542,100 acres) and desert bighorn and Rocky Mountain bighorn sheep ranges and migration routes (3 million acres), thus contributing to the vegetation restoration and reduction in the weed risks in these areas. In the remainder of the planning area, livestock grazing may be used as tool in the control of existing weed populations.

Special Designations. Impacts associated with special designations would be similar to the Proposed RMP although the total number of new ACECs and their acreages would be less than in the Proposed RMP.

Conclusion. Alternative B would be similar to the Proposed RMP in terms of weed management because the substantial increase in vegetation treatments under this alternative would temporarily increase the risk of weed invasion and expansion in areas disturbed by treatment but reduce the vulnerability of these same areas on a long-term basis. Additional constraints on off-highway vehicle use throughout the planning area would substantially reduce weed dispersal associated with this activity. However, with the increase in use of off-highway vehicles in designated special recreation management areas and special recreation permit areas, the potential spread of weeds would increase. Monitoring measures would be implemented to ensure containment of any outbreaks. Therefore, this alternative would reduce the rate of spread of noxious and invasive weeds on a long-term basis and meet the program goal.

Alternative C

Impacts from Noxious and Invasive Weed Management Actions. Noxious and invasive weed impacts associated with program-specific management activities would be the same as or similar to those described for the Proposed RMP. Overall weed control costs are expected to increase in the short term during the period of increased vegetation treatment and then stabilize over the long term as resilient vegetation is reestablished on treated areas. With the intensive commodity use under Alternative C, long-term weed control costs are expected to remain higher than under the Proposed RMP.

Impacts from Other Programs. Noxious and invasive weed impacts associated with vegetation, special status species, wild horses, renewable energy, travel management and off-highway vehicle use, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, special designations, and health and safety would be the same as or similar to the Proposed RMP. The following interrelated programs would result in different impacts compared to the Proposed RMP.

Lands and Realty. Noxious and invasive weed impacts associated with lands and realty management activities would be the same as described for the Proposed RMP except that a total area available for possible disposal would be about four times larger.

Recreation. This alternative includes the designation of nine special recreation management areas totaling approximately 2.6 million acres and four special recreation permit areas for competitive events totaling approximately 1.3 million acres. Four of the nine special recreation management areas would emphasize recreational use of off-highway vehicles. These areas would be particularly vulnerable to introduction and spread of invasive species.

Fire Management. The full suppression approach to fire management would likely result in short-term reduction of fire events followed by increased number of large-scale events over a longer period. The large-scale, intense fire events create burned areas that are typically more difficult to successfully revegetate, thus increasing the risk for establishment and spread of invasive and noxious weed species.

Conclusion. The level of vegetation treatments involved in Alternative C would be approximately the same as the Proposed RMP. This alternative, like the Proposed RMP, would reduce the long-term impacts of noxious and invasive weeds through vegetation treatments, but this would likely be offset by the increased probability of weed establishment and spread following major wildland fire events. With the increase in use of off-highway vehicles in designated special recreation management areas and special recreation permit areas, the potential spread of weeds would increase. Monitoring measures would be implemented to ensure containment of any outbreaks.

Alternative D

Impacts from Noxious and Invasive Weed Management Actions. With the prohibition of use of selected herbicides, such as the sulfonylurea group and other acetolactate synthase inhibitors, as proposed under Alternative D, it is anticipated that there would be an increase in invasive-dominated areas in the planning area due to the lack of an effective control method. For example, the sulfonylurea herbicides are highly effective tools for the reduction of hoary cress, tall whitetop, and Russian knapweed. Overall weed control costs would be reduced under Alternative D in the short term, but would escalate dramatically in the long term because of the higher probability of intense fire events and more limited rehabilitation practices.

Impacts from Other Programs. Noxious and invasive weed impacts as a result of special status species, special designations, and health and safety would be similar to those described for the Proposed RMP.

Vegetation. Weed treatment after fire use would minimize the potential for invasion and spread of noxious and invasive species within burned areas in the short term. After several years of weed treatment and revegetation, perennial plant cover would be adequately established, which would minimize invasion by noxious and invasive species.

Wild Horses. Wild horses would be managed in the same 24 herd management areas as in Alternative A, but populations would be uncontrolled in these areas. It is expected that the increasing herds would lead to vegetation deterioration and increased vulnerability of these areas to establishment and spread of noxious and invasive species.

Lands and Realty. This alternative would require no net loss of public lands, reducing the amount of disposal and subsequent development. This also would reduce the spread of weeds. No additional corridors would be designated and this limitation would reduce the spread of weeds.

Renewable Energy. Renewable energy projects would not be authorized under this alternative so effects from such development would not occur.

Travel Management and Off-highway Vehicle Use. This alternative would effectively close the decision area to off-highway vehicle use except on maintained roads and trails, a substantially lower level of authorized use than in the other alternatives. This would reduce the likelihood of weed spread through use of off-highway vehicles.

Recreation. Allowable recreation uses under Alternative D would not include any off-road vehicle races, thereby reducing the likelihood of weed spread through such events and the associated traffic.

Livestock Grazing. No livestock grazing would be permitted, thus removing livestock use not only as a weed vector, but also as a useful management tool in selected settings to control particular weed species or to help incorporate seeds into the soils of areas being rehabilitated.

Forest/Woodland and Other Plant Products. Harvest of forest and woodland products would be limited to pinyon pine nuts by American Indians, thus effects regarding potential spread of invasive species would be minimal.

Geology and Minerals Extraction. The entire planning area would be closed to development of leasable minerals and mineral materials entry. Approximately 5 million acres would be open to locatable mineral entry, approximately 50 percent less than in the reasonably foreseeable development scenario (see Section 4.18). Overall, the total disturbance from mineral development actions would be approximately 3,700 acres in contrast to the 17,100 acres in the Proposed RMP. Therefore, the impacts from minerals development, as described in the Proposed RMP, would be much less in Alternative D than in the Proposed RMP.

Fire Management. Fire management would include no suppression of wildland fire except for human-caused and those that threaten life and/or property. Over the long term, this would result in larger wildland fires, increasing the expansion of invasive species.

Special Designations. No ACECs would be designated under this alternative and any potential effects associated with such designation would be eliminated.

Conclusion. Weed management would involve exclusion of some groups of herbicides. This would effectively reduce the capability to control several weed species and increase impacts associated with noxious and invasive weeds. In the short-term, the reduction in discretionary activities that serve as vectors for weed dispersal may temporarily reduce the rate of spread for existing populations and the rate of introduction for new species. However, since very few fires would be suppressed, the spread of noxious and invasive weeks throughout the planning area would likely be accelerated in both the short and long term. Once this occurred, the control of noxious and invasive species would not be attainable. Thus, the combination of weed management actions with other program actions under this alternative is not expected to reduce the rate of spread of noxious and invasive weeds in the long term, and, thus, would fail to meet the program goal.

4.22 Special Designations

Existing and nominated ACECs that met relevance and importance were analyzed in relationship to each of the alternatives (see **Table 4.22-1**).

Impact Issues

Special designation areas are designated based on relevance and importance and contain resources that require special management to preserve their values. The primary impact issue associated with special designation areas is whether the management prescriptions identified for a designated area will in fact protect and preserve its unique and sensitive values.

Assumptions for Analysis

None.

Interactions with Other Programs

The special designations management program would not be affected by the management actions of most other resource programs. Since special designation areas require special management to preserve their values, management prescriptions would be developed that preempt the management actions of other programs as necessary. Initial management prescriptions are presented in Chapter 2.0, and after completion and approval of the RMP, they would be expanded in individual special designation area management plans. Interactions with the lands and realty, fire management, and noxious and invasive weed management programs will be discussed in this section.

Goal

Evaluate areas of interest for special designation and appropriately manage those areas that meet necessary requirements.

Objective

To ensure that multiple use activities within the planning area are consistent with the management plans developed for special designation areas such as ACECs.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. After completion and approval of the RMP, during project implementation, additional mitigation

Table 4.22-1
Consideration by Alternative of Nominated ACECs that Meet Relevance and Importance

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
ROCK ART							
Alamo Pictograph Site	480 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Ash Springs (Pahranagat Rock Art)	160 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Detailed management actions designed to protect rock art are part of the Proposed RMP and Alternatives B, C, and D and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Black Canyon (Pahranagat Rock Art)	400 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Christmas Wash (Snake Range Rock Art)	1,920 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. This area currently is protected by its location within a designated wilderness, which limits access. The wilderness management plan for this area would address cultural values. Further, under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Crystal Wash (Pahranagat Rock Art)	1,440 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Detailed management actions designed to protect rock art are part of the Proposed RMP and Alternatives B, C, and D and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Evergreen Flat (Pahranagat Rock Art)	960 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Rock art resources are and would be protected because of their location within the existing Kane Springs ACEC, which is recommended to be retained as an ACEC in the Proposed RMP and Alternatives A, B, and C. The Kane Springs ACEC Management Plan would address rock art resources. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, no ACEC designation for rock art is proposed because unwanted public attention to this relatively unknown area could result in damage to the resource.				
Frenchy Flat (Pahranagat Rock Art)	220 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Hell's Half Acre (Pahranagat Rock Art)	320 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Hiko Canyon (Pahranagat Rock Art)	15 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Honeymoon Hill/ City of Rocks	3,900 to 5,900 acres	Rock art	3,900 acres	0 acres	3,900 acres	5,900 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Alternative C proposes the largest ACEC in order to protect the cultural values within this commodity-oriented alternative. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Moriah Site (Pahranagat Rock Art)	640 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Mount Irish	15,100 to 26,200 acres	Rock art	15,100 acres	0 acres	26,200 acres	26,200 acres	0 acres
			This potential ACEC includes the Mount Irish Archeological District. Under Alternative A, this is not an existing ACEC. Even though 15 percent of the nominated area lies within designated wilderness, special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. The wilderness management plan for this area would address cultural values within the designated wilderness. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Negro Creek (Snake Range Rock Art)	560 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Pahroc Rock Art	3,200 acres	Rock art	2,400 acres	0 acres	3,200 acres	3,200 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Even though 30 percent of the nominated area lies within designated wilderness, the rock art location is not within the designated wilderness; therefore, special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. The wilderness management plan for this area would address additional cultural values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Six Mile Flat (Pahranagat Rock Art)	2,160 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Shooting Gallery	20,700 acres	Rock art	15,600 acres	0 acres	20,700 acres	20,700 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Tunnel Canyon	200 acres	Fremont Pictographs	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Weepah Spring (Pahranagat Rock Art)	5,120 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art are part of these alternatives and provide sufficient protection for the relevant and important values. This area currently is protected by its location within a designated wilderness, which limits access. The wilderness management plan for this area would address rock art resources. Further, under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
White River Narrows (Pahranagat Rock Art)	8,960 acres	Rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Detailed management actions designed to protect rock within this national register district are part of the Proposed RMP and Alternatives B, C, and D and would provide sufficient protection for the relevant important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
OTHER ARCHAEOLOGICAL RESOURCES AND HISTORIC PRESERVATION							
Baker Archeological Site	80 acres	Fremont habitation site	80 acres	0 acres	80 acres	80 acres	0 acres
			Under Alternative A this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Bennett Springs	520 acres	Historic landscape	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect historic trails are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management. A higher visual resource management class is being assigned to this area through this RMP to protect the landscape under the Proposed RMP and Alternatives B, C, and D.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Bristol Wells	400 acres	Historic mining town and cemetery	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Criteria for protection of historic mining towns and cemeteries in the Proposed RMP and Alternatives B, C, and D provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Carbonari Sites	21,279 acres	Scattered charcoal production sites	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, these are not existing ACECs. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to these relatively unknown areas, which could result in damage to the resource. Detailed management actions designed to protect historic mining are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Delamar	4,160 acres	Historic mining town	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Criteria for protection of historic mining towns and cemeteries in the Proposed RMP and Alternatives B, C, and D and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Garrison Archeological Site	160 acres	Fremont Village	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect formative Puebloan sites are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Gleason Canyon and Panaca Charcoal Kilns	4,000 acres	Charcoal kilns	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. A recreation project plan to be written under the Proposed RMP and Alternatives B, C, and D would address these values and preclude the need for special management through an ACEC. Detailed management actions designed to protect historic mining are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Goshute Lake	18,360 acres	Paleo-Indian site	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to these relatively unknown areas, which could result in damage to the resource. Detailed management actions designed to protect Paleo-Indian sites are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Hendry's Creek/Rock Animal Corral	3,300 acres	Archeological site	3,650 acres	0 acres	3,300 acres	3,300 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Jake's Valley Paleo Shoreline	19,209 acres	Paleo-Indian site	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect Paleo-Indian sites are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Mahoney Canyon Jasperoid Source	200 acres	Tool stone quarry	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect tool-stone sources or quarries are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Modena Obsidian Source	13,260 acres	Obsidian source	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect tool-stone sources or quarries are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Mormon Peak Caves, Mormon Mountains, and Mormon Peak	123,000 acres	Extensive archaeological resources	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect rock art, rockshelters, and cave sites are part of these alternatives and provide sufficient protection for the relevant and important values. The cultural values are currently protected by their location within a designated wilderness, which limits access. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Osceola and Osceola Ditch	14,600 acres	Historic town and ditch	0 acres	0 acres	14,600 acres	14,600 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Park Range Aboriginal Sites	42,154 acres	High altitude aboriginal sites	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect prehistoric complex are part of these alternatives and provide sufficient protection for the relevant and important values. Currently this area is protected by its location within a wilderness study area and physical access is extremely difficult. Both of these reasons limit access to the area. Further, under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Rose Guano Bat Cave	40 acres	Historic guano mine and cave, wildlife	40 acres	0 acres	40 acres	40 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Sawmill Canyon	9,920 acres	Historic timber operations and rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect historic mining and rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Snake Creek Indian Burial Cave	40 acres	Archeological resource and cave, zooarchaeological	40 acres	0 acres	40 acres	40 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

<table>
<tr><th rowspan="2">Nominated ACEC by Category</th><th rowspan="2">Acres/Miles of Public Land in Nomination[1]</th><th rowspan="2">Primary Resource Value</th><th colspan="5">Management Considerations and Proposed Designations for ACECs</th></tr>
<tr><th>Proposed RMP</th><th>Alternative A</th><th>Alternative B</th><th>Alternative C</th><th>Alternative D</th></tr>
<tr><td>Stateline Canyon Graveyard (Rice Family Cemetery)</td><td>10 acres</td><td>Historic graveyard</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td></tr>
<tr><td colspan="3"></td><td colspan="5">Under Alternative A, this is not an existing ACEC. Detailed management actions designed to protect historic cemeteries and isolated gravesites are part of the Proposed RMP and Alternatives B, C, and D and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.</td></tr>
<tr><td>Sunshine Locality National Register District</td><td>34,540 acres</td><td>Paleo-Indian site</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td></tr>
<tr><td colspan="3"></td><td colspan="5">Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect Paleo-Indian sites are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.</td></tr>
<tr><td>Tempiute Obsidian Source</td><td>29,767 acres</td><td>Obsidian source</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td></tr>
<tr><td colspan="3"></td><td colspan="5">Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Detailed management actions designed to protect tool-stone sources or quarries are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.</td></tr>
<tr><td>Tri-County Paleo Site</td><td>19,967 acres</td><td>Paleo-Indian site</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td><td>0 acres</td></tr>
<tr><td colspan="3"></td><td colspan="5">Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect Paleo-Indian sites are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.</td></tr>
</table>

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Upper Meadow Valley Archeological Zone	980 acres	Prehistoric camp sites and rock art	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call more unwanted public attention to this known site, which could result in damage to the resource. Detailed management actions designed to protect prehistoric camp sites and rock art are part of these alternatives and provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Ward Mining District	2,500 to 11,000 acres	Historic mining area	0 acres	0 acres	11,000 acres	3,000 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Acreages vary by alternative as do management prescriptions. Management prescriptions are very restrictive for Alternative C in order to protect the cultural values from actions occurring in Alternative C. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
DESERT TORTOISE HABITAT							
Beaver Dam Slope ACEC	36,900 acres	Desert tortoise habitat	36,900 acres	36,900 acres	36,900 acres	36,900 acres	0 acres
			This is an existing ACEC under Alternative A and about half is within designated wilderness. Special management attention is required and designation would be retained for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Kane Springs ACEC	65,900 acres	Desert tortoise habitat	57,190 acres	57,190 acres	57,190 acres	57,190 acres	0 acres
			This is an existing ACEC under Alternative A and about half is within designated wilderness. Special management attention is required and designation would be retained for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Mormon Mesa ACEC	109,700 acres	Desert tortoise habitat	109,700 acres	109,700 acres	109,700 acres	109,700 acres	0 acres
			This is an existing ACEC under Alternative A and about half is within designated wilderness. Special management attention is required and designation would be retained for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
PALEONTOLOGICAL RESOURCES							
Andy's Mine Trilobites	100 acres	Trilobites	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Criteria for protection of paleontological resources in the Proposed RMP and Alternatives B, C, and D provide sufficient protection for the relevant and important values. A recreation project plan to be written under the Proposed RMP and Alternatives B, C, and D would manage the use of all trilobite areas and preclude the need for special management through an ACEC. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Chisholm Mine Trilobite Area	160 acres	Trilobites	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Criteria for protection of paleontological resources in the Proposed RMP and Alternatives B, C, and D provide sufficient protection for the relevant and important values. A recreation project plan to be written under the Proposed RMP and Alternatives B, C, and D would manage the use of all trilobite areas and preclude the need for special management through an ACEC. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Oak Springs Summit Trilobite Trail	40 acres	Trilobites	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Criteria for protection of paleontological resources in the Proposed RMP and Alternatives B, C, and D provide sufficient protection for the relevant and important values. A recreation project plan to be written under the Proposed RMP and Alternatives B, C, and D would manage the use of all trilobite areas and preclude the need for special management through an ACEC. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Ruin Wash and Klondyke Gap	160 acres	Fossil location	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Criteria for protection of paleontological resources in the Proposed RMP and Alternatives B, C, and D provide sufficient protection for the relevant and important values. A recreation project plan to be written under the Proposed RMP and Alternatives B, C, and D would manage the use of all trilobite areas and preclude the need for special management through an ACEC. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
GEOLOGIC RESOURCES							
Cave Valley Cave Geologic Area	40 acres	Cave resources	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Management under the existing District Cave Management Plan precludes the need for special management through an ACEC for all the alternatives. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Garnet Hill	1,210 acres	Rock hounding for garnets	0 acres	0 acres	0 acres	1,210 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for Alternative C in order to protect the geologic and rockhounding values within this commodity-oriented alternative. Special management attention is not required to protect rockhounding values for the Proposed RMP and Alternative B. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Leviathan Cave Geologic Area	160 acres	Cave resources	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Management under the existing District Cave Management Plan precludes the need for special management through an ACEC for all the alternatives. The cave is located within a designated wilderness. The wilderness management plan for this area would address cave resources. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Whipple Cave Geologic Area	160 acres	Cave resources	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Management under the existing District Cave Management Plan precludes the need for special management through an ACEC for all the alternatives. The cave is located within a designated wilderness. The wilderness management plan for this area would address cave resources. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
SCENIC VALUES							
Blue Mass Scenic area	950 acres	Spectacular rock spires and scenic pastoral setting	950 acres	0 acres	950 acres	950 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under the Proposed RMP and Alternatives B and C, the special management attention required would be through management as an ACEC instead of the existing scenic area. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Mount Grafton and North Creek Scenic Areas	16,100 acres	Scenic limestone outcrops and vegetation	13,200 acres	0 acres	16,100 acres	16,100 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under the Proposed RMP and Alternatives B and C, the special management attention required would be through management as an ACEC instead of the existing scenic area. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Rainbow Canyon	45,827 acres	Scenic volcanic gorge	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. The proposed back country byway in the Proposed RMP and Alternative C precludes the need for special management in these alternatives. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management. A higher visual resource management class is being assigned to this area through this RMP to protect the landscape under the Proposed RMP and Alternatives B, C, and D.				
FLORA							
Heusser Bristlecone Research Natural Area	480 acres	Bristlecone pine	480 acres	0 acres	480 acres	480 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management. This area is a wilderness study area because of its instant study area status.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Park Range Pristine Meadows	1,280 acres	Pristine meadows	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. ACEC designation under the Proposed RMP and Alternatives B, C, and D would call unwanted public attention to this relatively unknown area, which could result in damage to the resource. Currently this area is protected by its location within a wilderness study area and physical access is extremely difficult. Both of these reasons limit access to the area. Further, under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Pygmy Sage Research Natural Area	160 acres	Pygmy Sage	0 acres	0 acres	0 acres	160 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for Alternative C in order to protect this pygmy sage research natural area within this commodity-oriented alternative. Special management attention is not required to protect pygmy sage for the Proposed RMP and Alternative B. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Scarlet Buckwheat-White Rock	640 acres	BLM sensitive plant species	640 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management is required for the Proposed RMP to protect the relevant and important values.				
Schlesser Pincushion	6,470 acres	Schlesser pincushion cactus	6,470 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management is required for the Proposed RMP to protect relevant and important values.				
Shoshone Ponds Natural Area	1,240 acres	Rocky Mountain juniper (swamp cedar) in alkali valley soils. Ponds with endangered fish	1,240 acres	0 acres	1,240 acres	1,240 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management. This area is a wilderness study area because of its instant study area status.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Swamp Cedar Natural Area	3,200 acres	Rocky Mountain juniper (swamp cedar) in alkali valley soils, cultural	3,200 acres	0 acres	3,200 acres	3,200 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management. This area is a wilderness study area because of its instant study area status.				
White River Valley	15,600 acres	BLM sensitive plant species and two sensitive butterflies	15,600 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management is required under the Proposed RMP to protect the relevant and important values.				
FAUNA							
All remaining Greater sage-grouse and pygmy rabbit habitat	Approximately 5 million acres	Greater sage-grouse and pygmy rabbit habitat	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under all the alternatives, the BLM is directed by bureau policy to prevent listing of BLM and state sensitive species. All of the alternatives provide for appropriate management of greater sage-grouse and pygmy rabbit habitats. The plan includes numerous standard operating procedures identified in the appendices to protect special status species. This would provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Baking Powder Flat	13,000 acres	Baking Powder Flat blue butterfly	13,640 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management is required under the Proposed RMP to protect the relevant and important values.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Flat Spring	42 acres	Cold spring system containing Pygulopsis cruciglans	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under all the alternatives, the BLM is directed by bureau policy to prevent listing of BLM and state sensitive species. The plan includes numerous standard operating procedures identified in the appendices to protect special status species. This would provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Hampton Creek	0.5 mile on public land	Bonneville cutthroat trout	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under all the alternatives, the BLM is directed by bureau policy to prevent listing of BLM and state sensitive species. The plan includes numerous standard operating procedures identified in the appendices to protect special status species. This would provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Hendry's Creek	0.3 mile on public land	Bonneville cutthroat trout	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under all the alternatives, the BLM is directed by bureau policy to prevent listing of BLM and state sensitive species. This would provide sufficient protection for the relevant and important values. The plan includes numerous standard operating procedures identified in the appendices to protect special status species. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Highland Range (including Highland Peak and Anderson Canyon)	12,000 acres	Two rare butterflies and the basin waxflower plant	6,900 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management is required for the Proposed RMP to protect the relevant and important values.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Pine (Ridge) Creek	2.5 miles on public land	Bonneville cutthroat trout	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under all the alternatives, the BLM is directed by bureau policy to prevent listing of BLM and state sensitive species. This would provide sufficient protection for the relevant and important values. The plan includes numerous standard operating procedures identified in the appendices to protect special status species. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
Steptoe Valley Cresentspot	1,940 acres	BLM and state sensitive species butterfly	1,940 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management is required for the Proposed RMP to protect the relevant and important values.				
Turnley Spring	41 acres	Cold spring system containing Pygulopsis cruciglans	0 acres	0 acres	0 acres	0 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Under all the alternatives, the BLM is directed by bureau policy to prevent listing of BLM and state sensitive species. The plan includes numerous standard operating procedures identified in the appendices to protect special status species. This would provide sufficient protection for the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				
RIPARIAN/SPECIAL STATUS SPECIES							
Condor Canyon	6,900 acres	Riparian and special status species, cultural	4,500 acres	0 acres	6,900 acres	6,900 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

Table 4.22-1 (Continued)

Nominated ACEC by Category	Acres/Miles of Public Land in Nomination[1]	Primary Resource Value	Management Considerations and Proposed Designations for ACECs				
			Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D
Goshute Canyon Natural Area	7,550 acres	Riparian and special status species and cave	7,100 acres	0 acres	7,100 acres	7,100 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management. This area is a wilderness study area because of its instant study area status.				
Lower Meadow Valley Wash	39,000 acres	Riparian and special status species	25,000 acres	0 acres	39,000 acres	39,000 acres	0 acres
			Under Alternative A, this is not an existing ACEC. Special management attention is required for the Proposed RMP and Alternatives B and C to protect the relevant and important values. Under Alternative D, the restrictions on resource management and permitted uses preclude the need for special management.				

[1] Nomination acreages have been rounded and, in some cases, represent approximate totals of combined sub-areas. The nomination acreages may differ from the acreages proposed for designation under each alternative if portions of the nominated area failed to meet the relevance and importance criteria or failed to require additional management protection.

measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Special Designations Management Actions.

Parameter – Areas of Critical Environmental Concern

Under the Proposed RMP, the three existing desert tortoise ACECs would be retained and 17 new ACECs would be designated. The proposed ACECs were determined to meet the relevance and importance criteria and would require special management in order to protect the resource values. The boundaries of the ACECs enclose a sufficient area to protect the sensitive resources for which the ACEC is proposed. Implementation of the special management prescriptions within the proposed ACECs (as detailed in Section 2.4.22.1) would result in additional resource protection on approximately 317,800 acres within the decision area. This protection is beyond what could be afforded by the other management actions contained in the Proposed RMP.

Parameter – Back Country Byways

One existing (Mount Wilson) and two new (Rainbow Canyon and Silver State Trail) Back Country Byways would be designated, offering additional opportunities for scenic drives. However, such designations would increase the public's awareness of these areas and subsequently the amount of use they receive. Depending on the type of use (e.g., highway vehicle, off-highway vehicle), there would be increased degradation of the routes and increased need for maintenance. Some users would welcome the increased recreation opportunities these designations provide, while others may see the designations resulting in an increase in user impacts and a decrease in the solitude they have experienced previously in these areas.

Parameter – Designated Wilderness

Designated wilderness would be managed effectively under existing laws, regulations, policies, and plans. Direction from these sources is sufficient to manage designated wilderness resources, and no additional management actions are presented in the Proposed RMP.

Parameter – Wilderness Study Areas

Wilderness study areas would be managed under the BLM's Interim Management Policy for Lands Under Wilderness Review to preserve the wilderness characteristics of the area until Congress has made a decision on wilderness designation. Implementation of this policy has proven to be effective in protecting wilderness values.

Parameter – Other Special Designations
Retention of the White River Narrows Archaeological District and the Garnet Hill Rock Hounding Area would protect the resources in and public uses of these areas. The eight areas dropped from special designations would continue be managed by the Ely Field Office to protect the resources and uses for which the areas were formerly designated.

Impacts from Other Programs. Other resource programs typically do not affect special designations. Special designation areas typically are used to protect an area from land use planning decisions in other programs. The following impacts associated with other program management actions have been identified.

Lands and Realty. The management prescriptions in Section 2.4.22 identify certain ACECs as "avoidance areas" for rights-of-way. This means that the granting of rights-of-way for low-disturbance facilities such as communication lines could be allowed. Each project would be reviewed on a case-by-case basis to ensure that any impacts from a right-of-way would be acceptable given the resource constraints for which the special designation was made.

Fire Management. Fire suppression activities may require cross-country travel across ACECs or along Back Country Byway routes, resulting in surface disturbance and potentially impacts to the resources for which the special designations were made. While such impacts will be avoided if at all possible, the unique characteristics of a wildland fire may make them unavoidable.

Noxious and Invasive Weed Management. Management actions may be needed in special designation areas to control noxious or invasive weed infestations. Precautions would be taken in developing and implementing weed control plans to ensure that these activities do not impact the resources for which the special designation was made.

Conclusion. Approximately 317,800 acres would be designated as three existing and 17 new ACECs. Management prescriptions would protect the relevant and important values in these ACECs. Opportunities for scenic drives would be created through the designation of one existing and two new back country byways, though there may be some decrease in solitude in these areas. The Proposed RMP would meet the goal for the special designations program.

Alternative A

Impacts from Special Designations Management Actions.

Parameter – Areas of Critical Environmental Concern
Under Alternative A, the three existing desert tortoise ACECs would be retained. The boundaries of these ACECs, developed in coordination with the U.S. Fish and Wildlife Service, enclose a sufficient area to protect desert tortoise. Implementation of the special management prescriptions within the ACECs (as detailed in Section 2.5.22.1) would result in resource protection on approximately 203,670 acres within the decision area. This protection is beyond what could be afforded by the other management actions contained

in the Proposed RMP. However, no protection would be afforded to the other sites nominated as ACECs and found to meet the relevance and importance criteria for ACECs (see Appendix D).

Parameter – Back Country Byways
Under Alternative A, the Mount Wilson Back Country Byway would be retained. Impacts from this retention are discussed under the Proposed RMP.

Parameter – Designated Wilderness
Under Alternative A, management of designated wilderness would be the same as discussed for the Proposed RMP.

Parameter – Wilderness Study Areas
Under Alternative A, impacts to wilderness study areas would be the same as discussed for the Proposed RMP.

Parameter – Other Special Designations
Under Alternative A, the 23 existing special designation areas identified in Section 2.5.22 would be retained. No new special designation areas would be designated under this alternative. Management of these areas would continue to focus on resource protection.

Impacts from Other Programs. Other resource programs typically do not affect special designations. Special designation areas typically are used to protect an area from land use planning decisions in other programs. Under Alternative A, special designation impacts associated with lands and realty, fire management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP.

Conclusion. Approximately 203,670 acres would be designated as three existing ACECs. Management prescriptions would protect the relevant and important values in these ACECs. However, no other nominated areas would be designated as ACECs, and no back country byways would be designated. These management actions would not protect the resource values deemed relevant and important nor provide the benefits of designated scenic drives. Alternative A would not meet the goal for the special designations program.

Alternative B

Impacts from Special Designations Management Actions.

Parameter – Areas of Critical Environmental Concern
Under Alternative B, the three existing desert tortoise ACECs would be retained and 15 new ACECs would be designated. The proposed ACECs were determined to meet the relevance and importance criteria and would require special management in order to protect the resource values. The boundaries of the ACECs enclose a sufficient area to protect the sensitive resources for which the ACEC is proposed. Implementation of the special management prescriptions within the designated ACECs (as detailed in Section 2.6.22.1)

would result in additional resource protection on approximately 338,000 acres within the decision area. This protection is beyond what could be afforded by the other management actions contained in the Proposed RMP.

Parameter – Back Country Byways
Under Alternative B, the Silver State Trail Back Country Byway would be designated. Impacts from this designation are discussed under the Proposed RMP.

Parameter – Designated Wilderness
Under Alternative B, management of designated wilderness would be the same as discussed for the Proposed RMP.

Parameter – Wilderness Study Areas
Under Alternative B, impacts to wilderness study areas would be the same as discussed for the Proposed RMP.

Parameter – Other Special Designations
Under Alternative B, impacts to other special designations would be the same as discussed for the Proposed RMP.

Impacts from Other Programs. Other resource programs typically do not affect special designations. Special designation areas typically are used to protect an area from land use planning decisions in other programs. Under Alternative B, special designation impacts associated with lands and realty, fire management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP.

Conclusion. Approximately 338,000 acres would be designated as three existing and 15 new ACECs. Management prescriptions would protect the relevant and important values in these ACECs. Opportunities for scenic drives would be created through the designation of one new back country byway (the Silver State Trail), though there may be some decrease in solitude in this area. The benefits of designating two additional byways would not be realized. Alternative B would meet the goal for the special designations program.

Alternative C

Impacts from Special Designations Management Actions.

Parameter – Areas of Critical Environmental Concern
Under Alternative C, the three existing desert tortoise ACECs would be retained and 17 new ACECs would be designated. The proposed ACECs were determined to meet the relevance and importance criteria and would require special management in order to protect the resource values. The boundaries of the ACECs enclose a sufficient area to protect the sensitive resources for which the ACEC is proposed. Implementation of the special management prescriptions within the designated ACECs (as detailed in Section 2.7.22.1)

would result in additional resource protection on approximately 333,400 acres within the decision area. This protection is beyond what could be afforded by the other management actions contained in the Proposed RMP.

Parameter – Back Country Byways
Under Alternative C, the Silver State Trail Back Country Byway would be designated. Impacts from this designation are discussed under the Proposed RMP.

Parameter – Designated Wilderness
Under Alternative C, management of designated wilderness would be the same as discussed for the Proposed RMP.

Parameter – Wilderness Study Areas
Under Alternative C, impacts to wilderness study areas would be the same as discussed for the Proposed RMP.

Parameter – Other Special Designations
Under Alternative C, impacts to other special designations would be the same as discussed for the Proposed RMP.

Impacts from Other Programs. Other resource programs typically do not affect special designations. Special designation areas typically are used to protect an area from land use planning decisions in other programs. Under Alternative C, special designation impacts associated with lands and realty, fire management, and noxious and invasive weed management activities would be the same as described for the Proposed RMP.

Conclusion. Approximately 333,400 acres would be designated as three existing and 20 new ACECs. Management prescriptions would protect the relevant and important values in these ACECs. Opportunities for scenic drives would be created through the designation of one new back country byway (the Silver State Trail), though there may be some decrease in solitude in this area. The benefits of designating two additional byways would not be realized. Alternative C would meet the goal for the special designations program.

Alternative D

Impacts from Special Designations Management Actions.

Parameter – Areas of Critical Environmental Concern
Under Alternative D, no ACECs would be retained or designated. Even though minimal discretionary activities would be authorized under other resource programs, the sensitive resources contained within the nominated ACECs, especially the three existing desert tortoise ACECs, could be affected by activities within the planning area.

Parameter – Back Country Byways

Under Alternative D, the Mount Wilson Back Country Byway would be retained. Impacts from this retention are discussed under the Proposed RMP.

Parameter – Designated Wilderness

Under Alternative D, management of designated wilderness would be the same as discussed for the Proposed RMP.

Parameter – Wilderness Study Areas

Under Alternative D, impacts to wilderness study areas would be the same as discussed for the Proposed RMP.

Parameter – Other Special Designations

Under Alternative D, none of the current special designation areas would be retained. With the minimal activity allowed under discretionary management programs, few impacts to the sensitive resources in the special designation areas would be anticipated from other uses.

Impacts from Other Programs. Under Alternative D, no special designations would be retained and no new areas would be designated. Since most discretionary activities associated with other programs would not be authorized, special designations were not considered necessary as part of this alternative. However, approximately 12,400 acres would be available for disposal, and approximately 5 million acres (50 percent on the decision area) would remain open to locatable minerals. Development of disposed lands and locatable mineral resources could impact resources in areas considered for special designations.

Conclusion. Under Alternative D, all special designations except designated wilderness and wilderness study areas would be eliminated, but with minimal activity allowed under other management programs, few impacts to the sensitive resources would be anticipated from other uses. Nevertheless, no special management or protect would be afforded to areas nominated for ACEC designation, and potential benefits to visitors from back country byway designation (other than the Mount Wilson Back Country Byway) would not be realized. Alternative D would not meet the goal for the special designations program.

4.23 Economic Conditions

Impact Issues

The primary economic and social issue is the relationship between the management of public lands and the support provided for local economic and community development.

Issues of specific economic and social concern to individuals, the state and local governments, and groups include the potential impacts of grazing on farm income and local economies, the impacts of future management on the economic stimulus derived from outdoor recreation, such as hunting, fishing, off-highway vehicle use, and tourism, and access to and use of public lands for various other purposes. Local governments also are concerned about land and realty actions that result in net losses in the amounts of private land in the region, and along with tribal governments, programs that unduly limit possible land disposal viewed as essential for future economic and community development. Local governments also are concerned about potential fiscal impacts of changes in land tenure/ownership on local tax revenues and demands for services, payments in lieu of taxes and impacts on population that also affect the latter. Concerns over the impacts of wildland fires on residents, property, and local fire suppression capabilities and associated budgets also are evident.

Assumptions for Analysis

A premise underlying Alternative A is that continuation of past and ongoing trends in watershed, vegetation, and related environmental conditions would result in continued deterioration in ecological system health in the Great Basin and planning area. Implied therein is a continued risk of frequent and potentially large-scale wildland fires across the planning area. A possibility exists that the combined effects of continued deterioration in ecological system health and the consequences of wildland fire could precipitate one or more ecological threshold conditions being reached within the foreseeable future, say, 50 years, whereby some watersheds lose their remaining functionality, triggering statutory management responses, protections, or recovery programs (e.g., protections under the Endangered Species Act). In turn, those responses and protections, may constrain the Ely Field Office's capacity to manage the planning area effectively for multiple-use and sustained yield to meet a broad spectrum of the needs of present and future generations. To the extent that statutory management responses or protections emphasize wildlife, vegetation, and air and water quality, a possible implication of such responses is restrictions on other uses, including recreation, grazing, possible land disposal, and mineral development. Over the long-term, the cumulative effects of wildland fire also could result in use restrictions, degraded water quality, or reduced commodity production that contribute to the regional economy. Over the long term, such effects have potentially far-reaching social and economic implications, both within and outside the planning area.

All alternatives assume increased funding for the Ely Field Office to implement watershed analysis and ecological system restoration activities. That funding would be over and above the Ely Field Office's base funding and future expenditures associated with wildland fire suppression. The amount of funding varies by alternative. Some of the additional funding could flow through to cooperating federal, state, and local government entities, but no specific assumptions about the monetary sums or timing of such flow-through arrangements were developed for this analysis.

Additional assumptions used in this analysis include:

- Under all alternatives, the additional funding for watershed analysis and treatment plans is assumed to be allocated 15 percent to Ely Field Office staff and operating costs and 85 percent for contracted services to be provided by the private sector, state and local governments, universities, or quasi-public non-governmental organizations. The actual allocation and distribution among entities would vary over time.
- The same lands would not necessarily be subject to watershed analysis and treatment plans in any given year.
- The Proposed RMP seeks a balanced management approach accelerating the rate of ecological restoration, while supporting recreation use, commodity production, and support for community and economic development across the planning area. Available funding of $10 million per year, over and above the future base funding for the Ely Field Office, plus the use of stewardship contracting is assumed to implement the Proposed RMP.
- Alternative A assumes $500,000 in annual funding for watershed analysis and treatment plans.
- Alternative B emphasizes restoration of at-risk resources, increasing the rate at which the ecological health of public lands within the planning area is evaluated and treatment plans developed and implemented. Alternative B assumes $10 million in annual funding for the Ely Field Office to achieve accelerated watershed analyses, treatment, and restoration.
- Alternative C emphasizes actions to facilitate community and economic development within White Pine, Lincoln, and eastern Nye counties, through management to support responsible commercial activities including commodity production, recreation, hunting, and tourism. Alternative C assumes $5 million in annual funding to accomplish the watershed evaluation process, and to formulate and implement management treatment plans and fuels/wildland fire risk reduction. Alternative C also would implement the use of stewardship contracting by the Ely Field Office to accelerate the pace of watershed restoration.
- Alternative D emphasizes the reduction of impacts to vegetation and restoration of properly functioning conditions across the planning area. Grazing and recreation use would be restricted to facilitate restoration and repopulation of wildlife species. Wildland fire management would include minimal fire suppression except to protect life and property. Assumed supplemental funding to implement Alternative D is $500,000 per year above the Ely Field Office's base funding.
- The employment and personal income implications of the Ely Field Office operations, including the additional funding assumed for watershed analysis and treatment were estimated using the IMPLAN

economic model. IMPLAN is an economic input-output model originally developed by the U.S. Forest Service, subsequently privatized and enhanced. It is widely recognized and accepted in regional economic impact assessment. (For more information see the Minnesota IMPLAN Group, www.implan.com.) The economic effects resulting from long-term changes in ecological conditions and associated changes in outputs, future energy and mineral development, or land disposal actions under the management alternative were not assessed quantitatively using IMPLAN. Rather, a qualitative assessment was completed. The decision to forego the quantitative assessment reflects a lack of information regarding the timing, location, cost, responsiveness and magnitudes of changes achieved across the planning area under the proposed adaptive management processes and alternatives.

Interactions with Other Programs

The economic and social conditions within the planning area potentially would be affected by actions within all of the resource management programs stemming from their ties to individual, community, and societal economic and social well-being. However, the most direct linkages and potentials for affecting such conditions arise in conjunction with resource management activities in the water, vegetation, fish and wildlife, lands and realty, renewable energy, travel management and off-highway vehicle use, recreation, livestock grazing, forest/woodland and other plant products, geology and mineral extraction, and fire management resources and the agency's efforts involving coordination with American Indians and issues of particular concern to them. The primary linkages and interactions are described below.

Management activities affecting vegetation have multiple linkages to economic and social conditions because of the vegetation resource's ties to wildlife (hunting and outfitting), wildland fire risk (economic and social well-being), recreation (local businesses and individual quality of life), livestock grazing (the ranch economy), and plant products (personal and commercial use). The management of fish and wildlife resources also is linked to individual social values and quality of life, as well as income for guides, outfitters, and local trade and service establishments that cater to their operations.

Water resources, renewable energy, mineral development, and lands and realty share linkages to future short-term and long-term job opportunities and incomes, as well as the potential to affect the general community and economic development outlook for the region. Community development in particular, and its implications for population growth, demands for public services and local government fiscal conditions, would be affected by future real estate disposal actions. In turn, the amount, location, and timing of future development are factors in assessing the relative risks associated with fire management in the urban interface. Finally, the management of native plants is tied to the concerns of American Indians, both in terms of cultural significance and personal consumption.

Changes in travel and recreation resource management affect how, how many, and where individuals and groups access and use the public lands. The changes in use patterns have potential economic implications for businesses, communities, and local governments and quality of life and social well-being impacts on individuals, groups, and institutions.

Unlike most other environmental resources, the RMP/EIS planning process does not include a resource program specifically focused on community economic and social conditions within the planning area. However, the vision statements for the Nevada BLM and the Ely Field Office (see Sections 1.3.2.1 and 1.3.2.2) include social and economic goals for the national, regional, and local communities. The assessment of potential impacts affecting the quality of the human environment, including economic and social conditions, is required under NEPA. The BLM is further required to consider such conditions and the potential impacts of its management actions on those conditions during the preparation of land use plans. The agency must manage public lands on the basis of multiple use and sustained yield to meet the needs of present and future generations (BLM Handbook H-1601-1, Appendix D). BLM regulations also mandate consideration of the consistency of the agency's land use plans with state and local government plans for the affected lands (see Section 1.9.1).

The linkages between local economic and social conditions and the resource programs, land use and management plans, and NEPA arise in the context of the range of program objectives and proposed management actions to achieve those objectives. Implementation of those techniques, or in some cases, the lack of implementation, can alter the existing public use, access, economic stimulus, land use, resource production, and other relationships between the public lands, their management and the local and non-local stakeholders. In turn, individual and community responses to the altered relationships may manifest themselves across a range of economic and social impacts. Therefore, impacts to economic and social conditions and environmental justice are not discussed in terms of individual program interactions but rather the entire proposed alternative.

Economic Conditions and Fiscal Linkages that Apply to All Alternatives

Economic Conditions. Both Lincoln and White Pine counties are engaged in active economic development efforts to attract new industrial development, promote the region's outdoor recreation and western heritage resources to tourists, and attract retirees to live in the area. Those economic development efforts seek additional jobs, income, maintenance and growth for residents, stabilization of county and community fiscal conditions, and enhance local economic diversity and sustainability. The latter objective derives in part from local awareness of the far-reaching shifts away from commodity-based rural economies, as well as the constraints to economic development imposed by the limited amount of privately owned land and corollary dependence on public lands and resources. While some future mineral development and associated short-term employment, population, and tax impacts likely would occur within the planning area, such activity likely would be short-term, repeating past cycles of relative growth and decline. As illustrated in **Table 4.23-1**, population projections, which generally mirror economic trends, call for modest growth in Lincoln County but substantial declines in White Pine County. Only minimal population changes are foreseen in the Nye County portion of the planning area. It should be noted that recent legislation (i.e., the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts) may make these population growth forecasts by the Nevada State Demographer's Office conservative.

Table 4.23-1
Project Population Growth, 2000 to 2020

Year	Lincoln County	White Pine County	Nevada
2000	4,178	9,033	2,018,723
2010	4,222	8,545	2,806,940
2020	5,006	7,445	3,412,147
Net Change	828	(1,588)	1,303,424
Compounded annual growth rate	0.9%	-1.0%	2.4%

Source: Nevada State Demographer's Office 2006.

The Lincoln County and White Pine County Conservation, Recreation, and Development Acts allow for the disposal of lands administered by the Ely Field Office within the planning area. A portion of the land disposed of could be used for residential development. For very general analysis purposes, it has been assumed that 27,900 dwelling units would be constructed on 18,600 acres in White Pine County and 86,100 dwelling units on 57,400 acres in Lincoln County. Since many of these dwelling units could have recreational or seasonal occupancy, it has been assumed that each dwelling unit would have one full-time resident. Further, it is assumed that the timeframe for this residential development would exceed the life of the Proposed RMP, something on the order of 50 years.

The economic trends that would interact with management of the planning area include:

- Long-term employment decreases in White Pine County and modest job gains in Lincoln County until land disposal is completed and subsequent development proceeds.

- All alternatives assume the Ely Field Office would proceed with land disposal under the Federal Land Transaction Facilitation Act, Lincoln County and White Pine County Conservation, Recreation, and Development Acts, and other approved mechanisms. No assumptions were developed regarding the geographic locations, specific parcels, acquiring parties, or timing of future land disposals. Disposed lands could be acquired by state, local, and tribal governments for public purposes; by private parties for economic development purposes; or by individuals for commercial, residential, or agricultural uses.

- The mix of future land use for disposed lands cannot be determined with current information. For this analysis, a general land use mix was developed for each alternative to illustrate future development potential. The base mix is: 25 percent open space, recreation, public or unbuildable due to topographic constraints; 5 percent industrial, commercial or office; 2.5 percent medium density residential (10 dwelling units per acre; 7.5 percent single family (6 dwelling units per acre); 15 percent low density single family (2 dwelling units per acre); 20 percent rural estate residential (1 dwelling unit per 2 acres); and 25 percent ranchettes (1 dwelling units per 20 acres). The base assumptions were adjusted to reflect a larger share of open space, recreation, public or unbuildable due to topographic constraints and ranchette development as the disposal acres increased, and lower shares of open space, recreation, public or unbuildable due to topographic constraints, industrial and commercial and medium density residential development as the total disposal acres of assumed disposal land declined. The resulting land use mix for each alternative is shown in **Table 4.23-2**.

Table 4.23-2
Assumed Use of Lands Disposed of in the Ely Planning Area

	Lincoln County	White Pine County	Nye County
Proposed RMP			
Open Space, Recreation, Public or Topographically Constrained (unbuildable) (acres)	14,360	4,660	NA
Industrial or Commercial (acres)	2,870	930	NA
Residential (acres)	40,210	13,033	NA
Alternative A			
Open Space, Recreation, Public or Topographically Constrained (unbuildable) (acres)	180	6,110	1,360
Industrial or Commercial (acres)	180	1,220	580
Residential (acres)	3,220	17,108	1,953
Alternative B			
Open Space, Recreation, Public or Topographically Constrained (unbuildable) (acres)	16,590	5,970	100
Industrial or Commercial (acres)	3,320	1,190	40
Residential (acres)	46,469	16,724	144
Alternative C			
Open Space, Recreation, Public or Topographically Constrained (unbuildable) (acres)	60,940	26,450	1,360
Industrial or Commercial (acres)	10,160	4,410	580
Residential (acres)	132,021	57,309	1,951
Alternative D			
Open Space, Recreation, Public or Topographically Constrained (unbuildable) (acres)	-	2,740	NA
Industrial or Commercial (acres)	140	550	NA
Residential (acres)	1,295	7,668	NA

Notes:

- Residential acres include a mix of medium density multifamily (10 dwelling units/acre), single family (6 dwelling units/acre), low density single family (2 dwelling units/acre), rural/estate development (1 dwelling unit/2 acres) and ranchettes (1 dwelling unit/20 acres).
- Future development of lands involved in disposal actions is likely to extend beyond the life of this plan, particularly in the event of large scale disposal actions.

Source: Nevada State Demographer's Office 2006.

- Completion of the Lincoln County Land Act and Lincoln County and White Pine County Conservation, Recreation, and Development Acts land sales and subsequent development would trigger substantial increases in construction and other jobs in southern Lincoln County and White Pine County, as well as long-term population gains not reflected in current demographic forecasts for the region.

- Over the long term, development and population growth associated with land disposals associated with the three land acts would result in significant changes in fiscal conditions and demands on public facilities and services for affected local governments and school districts. The timing, magnitude and net impact of those changes is uncertain.

- Future mineral and energy development is likely to occur in the planning area. Two separate sponsors have announced preliminary feasibility studies for new electric generating stations in the vicinity of Ely. Construction of one, but not both, could reasonably be foreseen within the life of this plan. No other major projects are presently identified. Construction and operations of a power plant and other mineral and energy development projects would generate new jobs and economic activity not reflected in the regional long-term forecasts. Such development would contribute to the local tax base, but also to demands on public facilities and services. The economic stimulus provided by project construction would be temporary, with the operational work forces contributing to the region's longer-term economic vitality and stability.

- Government employment, particularly state government, would serve a vital role in the economic foundations of Lincoln and White Pine counties.
- The planning area faces large-scale increases in recreation demand due to projected population gains in Nevada and surrounding states. Nevada, along with neighboring California, Utah, and Arizona, were among the fastest growing states between 1990 and 2000, collectively gaining over 7.1 million residents during the decade. Continued strong population growth is projected in those states through 2020. The combined population of the four states is projected to increase by nearly 15.8 million residents by 2020 (see **Table 4.23-3**).

Table 4.23-3

Projected Population for Nevada and Three Adjacent States from 2000 to 2020

Year	Nevada	Utah	California	Arizona	Four-state Total
2000	2,018,723	2,233,169	34,480,300	4,961,953	43,694,145
2020	2,910,959	3,371,071	45,821,900	7,363,604	59,467,534
Absolute Change	892,236	1,137,902	11,341,600	2,401,651	15,773,389
Percent Change	44	51	33	48	36

Sources: California Department of Finance, Arizona Department of Economic Security, Utah Governor's Office of Planning and Budget, Nevada Department of Taxation.

- In the short term, increasing demand would result in higher recreation use and associated increases in recreation spending and sales taxes, a portion of which accrue to local establishments and governments. The increased recreation pressure would be more concentrated in Lincoln County due to the proximity to Las Vegas and Interstate 15.
- Future recreation use may plateau over the long term as recreational access and use is limited across more of the planning area in response to environmental protection measures.
- Unemployment in White Pine County would remain above the statewide average under Alternative A until out-migration reestablishes a balance in the labor market.
- Tribal operations and the personal consumption expenditures of individual tribal members in the planning area would continue to provide support for the local retail and service sectors.
- Total personal income would decline in White Pine County as the numbers of jobs and residents decline, but increase slightly in Lincoln County. Average per capita incomes among working households

in White Pine County may climb due to the large share of government jobs, but the overall average would decline due to the effects of the large inmate population on the computation of average income.

- Temporary increases in employment, income, and trade for local establishments would accompany the construction of transmission lines and pipelines, wildland fire suppression, and other activities that occur within the planning area, but these activities have few or no long-term economic manifestations.

- Construction and operation of a new electric generating station would result in more substantial temporary and long term economic, demographic and fiscal changes for White Pine County.

- Absent development stimulated by the three land disposal acts, the overall economic output of White Pine County would decline over the long term. The economic output of the Nye County portion of the planning area and of Lincoln County would see decreases in farm output tied to grazing. However, increases in other industrial sectors of Lincoln County's economy, tied to population and economic gains associated with recreation use and second home development, may offset those reductions.

Fiscal Linkages. Future land purchases, sales, disposals via other approved mechanisms, and exchanges under the Proposed RMP could affect the acreage of BLM-administered lands in the planning area. Each net acre of change would affect the entitlement acres for computing future payments in lieu of taxes in the respective counties affected by a land action. The reductions in entitlement acres are not material because population, rather than entitlement acreage, is the operative driver for computing those payments in the planning area. In other words, payments in lieu of taxes in the future would be a function of the size of the resident population. Thus, future receipts of payments in lieu of taxes in Lincoln County would remain relatively constant over time, absent development spawned by the Lincoln County Land Act and Lincoln County Conservation, Recreation, and Development Act. Based on projected baseline population growth, annual payment in lieu of tax payments to Lincoln County would increase by about $22,000 over the next 20 years, but increase dramatically following any future development and corresponding growth spawned by disposals under the land acts. Payments in lieu of taxes in White Pine County would decrease by about $86,000 annually as population declines, even as the allowable per capita payment increases, but also would increase following future development and population growth. Little change in payments in lieu of taxes payments to Nye County would be expected as a result of changes within the planning area.

Local fiscal linkages between the public lands managed by the Ely Field Office and local communities could be affected by land exchanges or federal land acquisitions in the region. Along with possible land disposals, such actions add or remove lands from the private tax rolls or incidentally affect other sources of revenues and expenditures. Such changes are likely to be relatively small initially, but increase over time. Local government expenditures for law enforcement and fire suppression could increase in response to the recreation and wildland fire management of the public lands. The added pressure on expenditures would not necessarily be accompanied by increases in federal revenues.

Impacts to the levels, mix, and location of future recreation use and tourism in the region would affect the levels of consumer spending and, thereby, future sales tax receipts. Given the anticipated increases in overall recreation use, future sales tax receipts would rise over time. White Pine County and Lincoln County both may forego the full benefit of the increases by funding mechanisms in place at the statewide level that provide rural counties options to accept a guaranteed level of funding from a portion of the sales tax levy in exchange for foregoing revenues should receipts increase above that level. Local governments may opt out of the program, but such a decision is irrevocable. Hence, retail sales and sales tax receipts would need to increase dramatically and be expected to persist at those higher levels before local governments would choose to end their participation in the program. Those conditions might arise in the context of future development spawned by land disposals under the three recent land acts.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Economic Conditions. The direct and secondary impacts of the Proposed RMP on local employment opportunities and income would be an estimated 255 to 260 additional jobs and $4.2 million in annual income over the next 20 years. Staffing levels for the Ely Field Office could expand by about 10 percent (11 to 14 jobs) with an estimated 239 to 244 jobs in the private and local public sectors.[1] Although funding for ecological restoration would be channeled through the Ely Field Office, the watershed analysis and treatment efforts, and hence, the employment opportunities and other associated economic benefits, would be dispersed across the planning area. Investment in restoration activities could spawn the establishment of specialized firms and services (e.g., native plant nursery) in the planning area, bringing added economic development to the region beyond the levels projected above. Implementation of stewardship contracting would yield additional new job opportunities. The initial creation of these jobs would lag the watershed analysis process, due to administrative, environmental compliance, and contract requirements. The number of supportable jobs is unknown.

The indirect economic consequences associated with the Proposed RMP with respect to promoting recreation use would alter the level, mix, and distribution of developed and dispersed recreation across the planning area. Dispersed, individual off-highway vehicle use would become more concentrated relative to current management but would likely continue to increase in magnitude. Developed recreation and use in conjunction with organized events also would increase. Future levels of big-game hunting may increase as expanding ranges and populations allow the Nevada Department of Wildlife to increase the number of tags issued. Stipulations on the issuance of outfitter and guide permits leave the total income generated by these activities unaffected. Availability of forest/woodland products for personal and commercial use would be expanded over current management. There is no anticipated change in economic value of products involved. Livestock grazing would be available over the long term on approximately 11.2 million acres within the planning area, but subject to fluctuations necessitated by restoration initiatives, adjustments for ecological health, the creation of forage reserves, and achievement of other management objectives.

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[1] These estimates reflect the default 15 percent BLM / 85 percent contracted services allocation of the additional restoration funds. Variances in allocations from the default assumption would result in some shifting of the employment impacts between the Ely Field Office and other entities, but the order of magnitude of the total job and income impacts would not be substantially different from the levels shown above.

A wider array of lands would be available for industrial, commercial, residential, and agricultural uses under the Proposed RMP, with the assumed disposal of approximately 75,600 acres during the life of this plan. The timing, type, and extent of subsequent development would depend on the identification of viable markets, individuals, or companies with the expertise and financial resources to start and operate new businesses, and the capability of communities to foster and support such development. To the extent that such development occurs, it would contribute to local employment and income growth and provide a measure of economic diversity and sustainability across the planning area. Such development would boost short-term construction employment in the affected communities. Uncertainties regarding these factors preclude estimation of the indirect employment and income effects that could stem from the Proposed RMP. Full development of disposed lands would be unlikely to occur during the life of this plan.

The Proposed RMP would result in temporary restrictions on livestock grazing that could affect the incomes of operators whose grazing privileges would be displaced. Authorizations of temporary nonrenewable use and establishment of a forage reserve could reduce the impact on income. Additional allotments would be affected in the future due to related constraints regarding Rocky Mountain bighorn habitat. Over the long term, the Proposed RMP could have a net positive impact on grazing and local farm income, as compared to current management, in the event that some share of the gain in available forage is allocated to livestock and wild horses and that such gains are adequate to offset any long-term limitations on grazing associated with the proposed ACECs and special status species habitats. Otherwise, some long-term adverse effects on ranch income could result.

Allowing grazing permits to be relinquished and converted to forage reserves would have minimal effect on the economic and social structure of the counties in the planning area. It would not involve a large number of grazing permits or animal unit months in comparison to animal unit months authorized annually on the planning area. If the Tamberlaine Allotment were to be relinquished the active use would be up to 2002 animal unit months. There would be positive economic impacts associated with allowing grazing use by permittees displaced by activities such as restoration, drought, or fire.

Fiscal Linkages. The effects of the Proposed RMP on established fiscal linkages between the public lands and local governments and businesses in the region would be based on its support for additional employment and population in the region. Over the long-term, population growth under the Proposed RMP would reach the level required to qualify for increased receipts of payment in lieu of taxes. The Proposed RMP also would generate higher grazing fee receipts, a portion of which would return to the local economy.

Future land disposal and subsequent development, combined with the positive effects of the higher employment and population in sustaining real estate values, would boost the ad valorem tax base of local governments and school districts. Increases in the ad valorem tax base generally are perceived as beneficial. Net changes in the levels of retail sales to residents, travelers, and outdoor recreationists and sportsmen would affect future levels of locally generated sales taxes. However, the net changes in sales may not translate directly into corresponding changes in local sales tax receipts because of provisions in Nevada's local government financing structure that provide rural governments protection against declining sales tax revenues in exchange for a guaranteed level of revenue and foregoing any short-term revenue increases in excess of the guaranteed amount.

Conclusion. The Proposed RMP would result in slight, long-term enhancements of the local economy, e.g., 255 to 260 jobs, across the planning area due to the added restoration funding, stewardship contracting, increased woodland commodity production, and developed and organized recreation. Ranch income would be adversely impacted over the short term, but would increase over the long term. Annual payments in lieu of taxes to Lincoln County would increase slightly and to White Pine County would decrease in the short term, but both would increase in the long term due to land disposal and development. RMP-related impacts on local fiscal conditions would be minimal and long term relative to local budgets.

Alternative A

Economic Conditions. Alternative A maintains current land use and management programs across the planning area. Consequently, fundamental linkages between the public lands, agency management actions, and local economic conditions would be maintained. For example, the agency would continue to process applications for utility and transportation rights-of-way to support mining, and dispersed recreation would be allowed across much of the planning area. Lands presently identified as suitable for possible disposal under various programs would remain eligible for potential disposal and some additional lands could be subject to disposal under the provisions of Congressionally-approved land acts. Disposal of a total of 31,900 acres of public lands, including 3,893 acres in Nye County, is assumed to occur during the life of this plan under Alternative A. The annual operating budget and staffing levels of the Ely Field Office would increase slightly by $500,000 above recent levels of about $17.1 million, adjusted for future inflation, and 147 employees, respectively. With 85 percent of the additional funding being channeled to contracted services, the Ely Field Office staffing could increase by 1 or 2 positions, with another 11 or 12 jobs in the private sector. Personal income across the planning area would increase by about $210,000 per year. The Ely Field Office would continue to be among the largest employers in the planning area.

The timing, type, and extent of subsequent development of disposed lands would depend on the identification of viable markets, individuals, or companies with the expertise and financial resources to start and operate new businesses, and the capability of communities to foster and support such development. To the extent that such development occurs, it would contribute to local employment and income growth and enhance economic diversity and sustainability across the planning area. Such development would boost short-term construction employment in the affected communities. Uncertainties regarding these factors preclude estimation of the indirect employment and income effects stemming from future development. Full development of lands disposed of under Alternative A would likely not occur during the life of this plan.

Wildland fire management and suppression costs represent another source of economic stimulus into the local economy, although not easily predictable in terms of magnitude, timing, and location. The total federal expenditures for fire suppression in the planning area would be expected to increase for the foreseeable future under Alternative A.

Maintaining existing linkages between the Field Office and the local economies does not imply the absence of change in future economic conditions.

More far-reaching than the uncertain outlook for commodity development are the potential implications of declining ecological health and other management aspects of Alternative A. Current limitations on lands subject to lease for potential geothermal, oil and gas, and wind energy would remain across much of the planning area, limiting the likelihood for such development occurring. While future development and the associated economic stimuli foregone because of such limitations would not diminish the existing economic support provided by public lands in the planning area, the trends in declining ecological health do have the potential to erode that economic support.

Declining ecological health conditions and the Ely Field Office's constrained budget for restoration are seen as ultimately triggering management actions that reduce the levels of resource utilization having positive regional economic linkages. Such actions include reductions in permitted grazing use, the closure of more areas to off-highway vehicle use and off-road travel, and directly or indirectly limiting dispersed recreation use in connection with ACEC designations. Diminished ecological health and the after-effects of wildland fires may detract from the perceived scenic and amenity values that are viewed as important factors in people's outdoor recreation and vacation travel route planning decisions, relocation decisions by retirees, and the amount of big-game hunting in the region. The after-effects of wildland fire also may include degraded water quality with potential adverse impacts on municipal and agricultural water users. The relationships between ecological health and these other factors are not fully understood; however, a consensus view is emerging that the trends in ecological health are likely to adversely impact, rather than enhance, local economic and social conditions. Additionally, as pointed out by Perryman et al. (2003), the direct costs of wildland fire suppression and rehabilitation throughout the Great Basin are considerable and increasing continually under current management approaches.

Farm income and the numbers of farm jobs would decline as declining rangeland health triggers reductions in livestock grazing on public lands. One recent study estimated the average value of livestock grazing in terms of agricultural output at $24.40 per animal unit month in Nevada. That study also ascribed a market value to the grazing permit itself (Resource Concepts Inc. 2001), although the BLM does not recognize such a value as it is tied to a permit, not a right. Economic effects would occur in both White Pine and Lincoln counties.

Fiscal Linkages. Over time, grazing fee receipts collected by the Ely Field Office would decline as temporary or permanent reductions in livestock grazing are enacted in response to declining range productivity. Subsequent distributions of those fees include 50 percent to the range improvement fund in the Field Office of origin and 12.5 percent to the state for distribution to the counties. Any reductions in future grazing consequently would correspondingly reduce grazing fee revenues returned to the planning area.

The long-term reductions in livestock grazing could undermine the continued economic viability of one or more ranching operations in the region. Decisions to cease agricultural operations would have fiscal implications for local governments, depending on the subsequent ownership and use of the underlying real property.

Other changes in local fiscal conditions also would occur over time, for example, declines in the ad valorem tax base of White Pine County as housing values decline due to population declines projected under Alternative A that are unrelated to the Ely Field Office management of the planning area. Such changes would be masked by growth associated with increases in retail sales to business and residents associated with the Lincoln County Land Act and Lincoln County and White Pine County Conservation, Recreation, and Development Acts land sales and subsequent development. Counties, municipalities and school districts would benefit from such increases in revenues. Demands on local public services and facilities and the costs of providing services would increase. Meeting these demands may be more challenging in Nye County given the vast area of the county and the relative remoteness of lands in the planning area from other population centers.

Over the long-term, population growth resulting from development of lands disposed under Alternative A could reach levels required to qualify for increased receipts of payment in lieu of taxes.

Conclusion. Alternative A would result in minor, long-term economic impacts (jobs, income, locally derived taxes, etc.) across the planning area. Such impacts would intensify over time, accruing across the entire planning area, though not necessarily uniformly. The adverse economic impacts in Lincoln County would be masked by major, long-term economic growth associated with the Lincoln County Land Act and the Lincoln County Conservation, Recreation, and Development Act. The impacts of these Acts are unrelated to the RMP and would be differentiated across alternatives based on the acreages of affected lands, the timing of disposals, and the type and pace of subsequent development. Federal payments in lieu of taxes and grazing fees received by White Pine County would decline by as much as $86,000 annually, until development facilitated by the White Pine County Conservation, Recreation, and Development Act is realized, but would increase in Lincoln County. Changes in payments in lieu of taxes and grazing fees would be minor relative to the total budgets of the affected local governments.

Alternative B

Economic Conditions. The incremental direct and secondary impacts of the $10 million in additional annual restoration funding on local employment and income under Alternative B include an estimated 255 to 260 additional jobs and $4.2 million in annual income over most of the next 20 years. Staffing levels for the Ely Field Office could expand by about 10 percent (11 to 14 jobs) with an estimated 239 to 244 jobs in the private and local public sectors.[2] Over time, the cumulative temporary economic stimulus associated with wildland fire suppression costs would be lower under Alternative B than under Alternative A.

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[2] These estimates reflect the default 15 percent BLM / 85 percent contracted services allocation of the additional restoration funds. Variances in allocations from the default assumption would result in some shifting of the employment impacts between the Ely Field Office and other entities, but the order of magnitude of the total job and income impacts would not be substantially different from the levels shown above.

Projected total annual personal income associated with Alternative B is $4.2 million within the planning area. Though the incremental funding supporting the income would be channeled through the Ely Field Office, the added economic benefits stimulated by the income would accrue across the region based on the residency pattern of the employees and the geographic distribution of vendors and contractors supporting the program and their expenditure patterns. Those patterns may vary over time in response to shifting geographic distribution of the watershed analysis and treatment priorities.

Disposal of a total of 90,600 acres of public lands is assumed to occur during the life of this plan under Alternative B. The total includes 294 acres in Nye County. The timing, type, and extent of subsequent development of disposed lands are subject to much uncertainty and contingent upon factors unrelated to Ely Field Office management. To the extent that such development occurs, it would contribute to the area's economic welfare, boosting short- and long-term employment opportunities and business activity. Uncertainties regarding these factors preclude estimation of the indirect employment and income effects stemming from future development. Full development of lands disposed of under Alternative B would likely not occur during the life of this plan.

Incremental changes in employment, economic output, and personal income growth, relative to the Proposed RMP, may stem indirectly from management actions and enhanced restoration activities associated with Alternative B. Potential sources of such indirect economic stimuli include the following:

- Construction and operations of mineral, utility, and renewable energy facilities accommodated by changes in land use management policies facilitating more development of these resources in the future.

- The planning area faces major increases in recreation demand, particularly for off-highway vehicle use. Demand for hunting, fishing, and other forms of dispersed and developed recreation also would increase. The closure of 1.1 million acres to off-highway vehicle use, limiting use to designated roads and trails on another 10.3 million acres and interim access changes during the watershed and restoration activities could temporarily reduce off-highway vehicle use and the associated economic stimuli or result in a geographical redistribution of recreation spending tied to changes in off-highway vehicle use patterns as compared to Alternative A.

- Over the long-term, and contingent on the Nevada Department of Wildlife management, big-game hunting levels and the economic stimulus associated with outfitting and guiding could increase as elk, desert bighorn sheep, and Rocky Mountain bighorn sheep ranges and populations expand.

- Farm and ranch income of individual operators holding grazing permits would be adversely affected by temporary restrictions on livestock grazing on allotments undergoing restoration, but livestock stocking rates could return to pre-treatment authorization levels following treatment. Of larger impact would be the total closure of 13 additional allotments within the Mojave Desert and partial to total closure of 189 allotments in areas of occupied or historic bighorn sheep habitat. The loss of income would depend on the individual operator's relative dependence on the affected allotment, the availability and affordability of alternative grazing or feed, and the operator's ability to adapt to changing livestock management conditions. The number of operators could decline under Alternative B.

- Over the long-term, farm and ranch employment and income would be reduced in relation to Alternative A, due to the elimination of grazing on the remainder of the Mojave Desert and reductions to accommodate the expanded ranges for desert bighorn and Rocky Mountain bighorn sheep. These reductions would be partially offset by long-term stabilization and improvements in rangeland health achieved under Alternative B.

- Potential industrial development opportunities supported by woodland commodity availability (e.g., pinyon-juniper processed for fence posts, fuel pellets, or other commercial products). The accelerated treatment rates would increase biomass availability, both in terms of quantity and variety, enhancing the commercial viability potential. However, the geographic size of the planning area and its implications for the concentrations of resource availability and distances to processing locations and markets may temper the extent of commercial activity.

- Increased commercial and industrial development opportunities spawned by future residential development in response to the land disposal process and indirect consequence of enhanced "lifestyle" migration to the area in response to the accelerated rangeland and watershed restoration efforts.

The magnitude and location of the indirect employment and income growth are subject to the caveats and uncertainties identified above in connection with population change. Many of the potential indirect gains associated with Alternative B would enhance the long-term economic stability and sustainability of the local economy by reducing the dependence on extractive-resource development.

The three Indian Reservations would not experience direct economic impacts from management activities under Alternative B. Increased economic opportunities may result indirectly from the development of any lands transferred to the Tribes or from overall changes in economic conditions related to commodity use, recreation, livestock grazing management, or participation in the ecological restoration programs funding under Alternative B. The magnitude of such economic effects is unknown due to uncertainty regarding the timing, amount, and future use of any possible land disposal or other actions and the extent to which future economic enterprises would be tribal undertakings or activities undertaken by individual members.

Fiscal Linkages. Impacts to the established fiscal linkages and future conditions directly related to Ely Field Office management would not be substantially different for Alternative B than those under Alternative A. Possible land disposal actions would decrease the number of entitlement acres in the respective counties. The vast size of the planning area diminishes the influence of the entitlement acres in determining payments in lieu of taxes as compared to that imposed by the small population base of the planning area. White Pine, Nye, and Lincoln counties collectively would garner about $38,000 per year in additional payments in lieu of taxes under Alternative B as compared to Alternative A. These changes would be in addition to those associated with future population growth occurring in conjunction with the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts. Induced population changes spawned by other changes in management are too speculative to project, but they would result in corresponding gains or reductions in payment in lieu of taxes. Local taxing entities could realize expansions of their respective ad valorem tax bases due to additions associated with potential land disposal and the economic activity associated with the annual budgets for enhanced restoration. Increases in retail sales to residents and visitors would increase sales tax and other state-distributed revenues for the counties, municipalities and school districts. The effects on county fiscal resources, for example, the ad valorem tax base, would be largest in Lincoln County, less in White Pine County, and very limited in Nye County.

Grazing fees collected in the planning area, a portion of which are distributed locally, are expected to decline over time under Alternative A. Similar trends also may occur under Alternative B. However, enhancements in rangeland health could arrest the declines such that the levels of grazing and grazing fee receipts are above those under Alternative A. Increases in retail sales to residents and visitors would increase sales tax and other state-distributed revenues for the counties, municipalities, and school districts.

Local communities would benefit indirectly from the reductions in wildland fire risks associated with the comprehensive watershed analysis, vegetation treatment, and other management techniques included in Alternative B. Over the long-term, the reductions in risk also would result in reduced pressures on local law enforcement and fire suppression support.

Conclusion. Alternative B would result in slight, long-term enhancements of the local economy, e.g., 255 to 260 jobs, across the planning area due to the added restoration funding, enhanced woodland commodity availability, and increases in big-game hunting. Gains would be tempered by long-term decreases in farm/ranch income from allotment closures in the Mojave Desert and bighorn sheep habitat. Lincoln and White Pine counties would see major, long-term economic growth triggered by the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts. Annual payments in lieu of taxes to White Pine County would be lower than at the present, but higher than under Alternative A. Payments in lieu of taxes would increase in Lincoln County. RMP-related impacts on local fiscal conditions would be minimal and long term relative to local budgets.

Alternative C

Economic Conditions. Implementation of Alternative C would result in marginally higher employment and personal income across the planning area relative to Alternative A. The increases would result from the incremental direct and secondary jobs supported by the additional $5.0 million in the Ely Field Office annual operating budget. The estimated employment increment is 125 to 130 jobs for the 15 to 20 years required to complete the watershed analysis and treatment program for the planning area.[3] The total impact would be comprised of 8 to 12 additional Ely Field Office staff and 117 to 122 jobs in the private sector or in local and state government. The total increment is about 116 jobs above the impact associated with Alternative A. Implementation of stewardship contracting would yield additional new job opportunities. The initial creation of these jobs would likely lag the watershed analysis process, due to the need to develop treatment programs, complete site-specific environmental compliance, and advertise and award contracts or enter into cooperative agreements. The number of supportable jobs is unknown, due to a lack of information regarding the number, type, location, marketable product values, and services to be provided via stewardship projects. Employment impacts beyond the RMP/EIS time horizon would depend on budget availability and subsequent management direction.

Investment in restoration activities and the management emphasis on enhancing of commercial activities could spawn development of specialized facilities and services (e.g., a native plant materials nursery) in the planning area. Such developments, if realized, would bring added economic development and jobs to the region beyond the levels projected above. The economic stimulus would be augmented by increased expenditures associated with full suppression of wildland fires. The level of such expenditures would logically vary from year-to-year and would likely tend to increase over time as heavy fuels accumulate in untreated acres. Although the additional funding for ecological restoration would be channeled through the Ely Field Office, the watershed analysis and treatment efforts, and hence the employment opportunities and other associated economic benefits, would be dispersed across the planning area.

Alternative C would promote increased organized and developed recreation activity in the planning area, compared to Alternative A, and the development of tourism and recreation-oriented facilities by both the public and private sectors. Higher levels of organized use would be counter-balanced by reductions in dispersed off-highway use due to restrictions on use to designated roads and trails across much of the planning area. The former would stimulate recreation spending in the region, providing added stimulus to local retail, eating and drinking, overnight lodging, and other such establishments and increases in the number of local jobs in the affected industries. However, those gains would be offset by reduction in spending by off-highway vehicle users such that the net impacts cannot be determined with the available information.

Alternative C also could promote short-term local economic development benefits associated with commercial development opportunities of biomass due to the enhanced availability, accessibility, and lower commodity costs afforded by the fuels management/wildland fire risk reduction efforts focused around local communities. In remote areas of the planning area, harvesting, and transportation costs may pose substantial barriers to the development of forest products processing and manufacturing. The active suppression of all wildland fires also may poses a risk of large-scale, uncontrollable wildland fires occurring in untreated areas, with attendant potential adverse economic impacts.

Commercial use opportunities under Alternative C would allow planning area-wide harvesting of additional species of trees, live trees, cactus and yucca collection, and the mechanical harvesting of pinyon pine nuts, subject to the constraints imposed by Nevada Revised Statutes 527.050-120. This management provision may encourage landscaping suppliers and contractors serving Las Vegas and other urban markets to explore the commercial viability of local operations. Stewardship contracting, which would provide opportunities for the Ely Field Office to exchange the value of products for restoration services provided, may enhance the commercial viability of such operations.

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[3] These estimates reflect the default 15 percent BLM / 85 percent contracted services allocation of the additional restoration funds. Variances in allocations from the default assumption would result in some shifting of the employment impacts between the Ely Field Office and other entities, but the order of magnitude of the total job and income impacts would not be substantially different from the levels shown above.

Up to 295,200 acres of land, distributed over a larger and more geographically diverse area than in Proposed RMP would be designated for possible disposal and ultimately for industrial, commercial, residential, and agricultural uses under Alternative C. The total area includes approximately 3,893 acres in eastern Nye County. The extent, timing, and location of subsequent development would depend on the identification of viable markets, individuals, or companies with the expertise and financial resources to start and operate new businesses, and the capability of communities to support such development. To the extent that such development occurs, it would contribute to increases in local employment, income, and economic diversity and sustainability within the planning area. Such development would boost construction employment in the affected communities. Uncertainties regarding the timing, location, and eventual use of possible land disposals preclude estimation of the indirect employment and income effects that could stem from Alternative C. Full development of lands disposed in Lincoln and White Pine counties under Alternative C would be highly unlikely during the life of this plan. Development of disposed lands in Nye County also is considered unlikely during the life of the plan, but is potentially foreseeable.

Short-term impacts on farm and ranch income tied to temporary restrictions on livestock grazing during treatment under Alternative C would be similar to those described for Alternative B. Fewer allotments within the Mojave Desert would be totally unavailable for grazing than in Alternative B, resulting in less impact to farm and ranch operations than under Alternative B. Other individual operators temporarily could be affected during restoration on any individual allotment. The loss of income would depend on the individual operator's relative dependence on the affected allotment, the availability and affordability of alternative grazing or feed, and the operator's ability to adapt to changing livestock management conditions. Temporary nonrenewable use may buffer impacts in some years. Temporary impacts also could be tempered by the establishment of a forage reserve as could be authorized under Alternative C.

Over the long-term, restoration could allow livestock grazing levels to increase above pre-treatment authorized levels, because additional forage would be allocated to livestock. Under such circumstance, Alternative C would have a net positive impact on grazing and local farm income, as compared to Alternative A. Such benefits may be enhanced in the short term by the increased commercial woodland and native plant commodity production. On a long-term basis, however, the fire suppression policy of this alternative would lead to increased risk of major wildland fires resulting in substantial reduction in availability of forest/woodland products.

Fiscal Linkages. The direct effects on established and future fiscal linkages associated with the Ely Field Office's management of the planning area and local governments in the region would be comparable to those under Alternative B, because both are based on $5.0 million in higher annual expenditures. Among the alternatives, land disposal under Alternative C would result in the largest net reduction in entitlement acres for purposes of payments in lieu of taxes. Over the long term, however, any effects of those reductions would be offset as the residential development and enhancement of commercial recreation and other business opportunities result in population growth qualifying the counties for higher future payments in lieu of taxes. The relative impacts would be greater in Lincoln and White Pine counties than in Nye County.

Future land disposal and subsequent development also would expand the ad valorem tax base of local governments and school districts. Over time, the expansion would be substantial, particularly in Lincoln

County. Higher volumes of retail sales to residents, travelers, and participants in organized recreation events would increase sales tax and other state-distributed revenues for the counties, municipalities and school districts. The gains in sales tax and business revenues would likely be tempered by minor reductions associated with reductions in off-highway vehicle use.

Conclusion. Alternative C would promote increased organized and developed recreation activity in the planning area, compared to Alternative A, and the development of tourism and recreation-oriented facilities by both the public and private sectors. Higher levels of organized use, in the form of truck and motorcycle events, would augment continued off-highway vehicle use accommodated by a management emphasis to designate roads and trails for such use. The combined organized and dispersed recreation use would stimulate recreation spending in the region, providing added stimulus to local retail, eating and drinking, lodging, and other such establishments, which would increase the number of local jobs in the affected industries.

Alternative D

Economic Conditions. The direct and secondary employment and income effects of the ecological restoration efforts under Alternative D would be equivalent to those under Alternative A given the $500,000 annual increase in the annual operating budget of the Ely Field Office. Local economies would experience reduced economic benefit from wildland fire management activities, because of the minimal fire suppression policies under Alternative D and also would be at risk of adverse economic impacts due to resource degradation and loss due to the wildland fire.

The elimination of grazing on public lands in the planning area under Alternative D would result in long-term direct and indirect economic impacts to area ranchers, affiliated agri-business firms, and other trade and service sectors of the economy. The impacts would accrue as many of the region's farmers and ranchers are forced to trim or eliminate cattle and sheep herds due to the loss of public grazing forage and lack of replacement grazing on private or other public lands. The reductions in herd sizes would eliminate revenues from livestock marketing. Such revenues were nearly $13 million in 2002. The loss of public grazing may force some ranchers to cease their agricultural operations entirely. Other farmers and ranchers may offset a portion of the loss from increased sales of hay no longer required for winter feed, but the net effect would likely be a substantial reduction in overall farm income.

Disposal of a total of 12,400 acres of public lands is assumed to occur during the life of this plan under Alternative D. None of the disposed lands would be in Nye County. The timing, type, and extent of subsequent development of disposed lands are subject to much uncertainty and contingent upon factors unrelated to Ely Field Office management. To the extent that such development occurs, it would contribute to the area's economic welfare, boosting short and long-term employment opportunities and business activity. Uncertainties regarding these factors preclude estimation of the indirect employment and income effects stemming from future development. Full development of lands disposed of under Alternative D could potentially occur during the life of this plan.

The withdrawals of lands open for mineral, geothermal, and wind energy development and the lack of new utility rights-of-way would preclude realization of potential future temporary and long-term economic benefits from such development. Temporary and short-term construction effects attributable to residential and commercial construction would be lower under Alternative D than under the other alternatives.

Fiscal Linkages. Alternative D stipulates no net loss of public lands in the area. Given that policy, the established fiscal linkages between the Ely Field Office's management activities on public lands and local communities would be maintained, because future land disposal would require an offsetting acquisition of lands from private or other non-federal parties. Consequently, changes in future payments in lieu of taxes would be comparable to those under Alternative A.

The indirect consequences of this policy would be of more importance to local communities and generally would be adverse relative to Alternative A. The loss of future development potential related to RMP-related management actions and associated implications for future population growth would diminish the potential for increasing future receipts of payments in lieu of taxes in Lincoln and White Pine counties, local ad valorem tax revenue generating capacity, and transfers for education and other public functions from the state. Such changes may be masked by offsetting changes associated with future potential development related to land disposal under the three land acts. Local distributions of grazing fees would be eliminated with the closure of all allotments. Farmers, ranchers, and others in the community adversely affected by the elimination of public grazing would experience a substantial diminishment in their individual and collective quality of life. Furthermore, they would see the erosion of agricultural viability in the planning area as a loss of an important dimension of the region's social and cultural underpinnings.

Conclusion. Alternative D would result in moderate, long-term economic impacts, due to substantial reductions in ranch income, wildland fire suppression, and withdrawals of lands open for mineral and energy-related development. The latter could result in foregone short-term economic benefits associated with utility construction projects precluded by the lack of utility rights-of-way. The Lincoln County and White Pine County economies would experience major, long-term economic growth associated with development of lands sold under the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts. Absent development spawned by land disposals under the three acts, annual payments in lieu of taxes to White Pine County would be lower than at the present, but comparable to those under Alternative A. The provision for no net loss of public lands may delay or limit land disposal actions that would otherwise foster community and economic development, thereby impacting local fiscal budgets.

4.24 Social Conditions

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Population and Demographics. Effects on regional population change directly attributable to the Ely Field Office's operations under the Proposed RMP are estimated at 510 to 560 residents across the region during the 15 to 20 years required to complete the watershed analysis throughout the planning area. The increase would result from the additional job opportunities supported in the planning area by the additional $10 million in annual operating budget for the Ely Field Office. Many of the affected households would live in and around Ely, attracted by the location of the Ely Field Office, the community's retail and services sector, and the relative availability of housing. Others may choose to live in nearby unincorporated areas of White Pine County or in Lincoln County, primarily in and around Caliente where the BLM operates a Field Station. The changes in the population of White Pine County would not manifest themselves as new growth per se, but rather as a relative decrease in the level of expected out migration.

The three American Indian reservations would not experience population growth directly as a result of the Proposed RMP, because like the non-reservation communities in White Pine County, the effect of the Proposed RMP would be one of stemming out migration rather than generating net growth. Induced population growth may result indirectly from the development of any lands transferred to the Tribes as part of a larger community and economic development conveyance and disposal process outside the context of the RMP/EIS. The Duckwater Shoshone and Ely Shoshone both have expressed interest in gaining additional lands to expand their respective reservations. The population effects associated with any such transfers is unknown due to the uncertainty regarding the timing, amount, and future use of any such transfers.

Population growth indirectly associated with future land disposal would occur in the planning area under the Proposed RMP. The magnitude, type, timing, and location of such growth are subject to the same caveats and uncertainties identified earlier in connection with the reservations and in Section 4.23 with respect to economic and fiscal effects. Residential development potentials associated with the land use development assumptions outlined in **Table 4.23-2** and assumed development densities, ranging from 10 dwelling units per acres to 1 dwelling unit per 20 acres, are presented in **Table 4.24-1**.

Table 4.24-1
Potential Residential Development Build-out (Dwelling Units) of Land Disposals[1]

	White Pine County	Lincoln County	Nye County
Proposed RMP	18,630	57,450	-
Alternative A	27,170	7,900	2,560
Alternative B	26,590	73,870	120
Alternative C	41,940	96,560	2,560
Alternative D	12,130	3,170	0

[1] Residential development potentials reflect land use assumptions outlined in **Table 4.23-2**, a range of residential development densities, and the absence of major development obstacles/constraints, such as inadequate water availability.

Under the Proposed RMP, development of over 76,000 additional dwelling units could occur on the disposed lands, more than a 1,100 percent increase over the aggregate housing stock of Lincoln and White Pine counties in 2000. Realization of that level of development during the life of this plan is extremely unlikely. Over time, the incremental growth would represent sizeable population increases in Lincoln County and White Pine County, and to a lesser degree in Nye County given the potential levels of residential development on the disposed lands. The populations associated with new developments would likely be a combination of year-round and seasonal residents.

Through its accelerated effects on improving ecological health, implementation of the Proposed RMP could indirectly contribute to a higher future population in the region, as compared to Alternative A. The higher population could manifest itself as additional growth in Lincoln County and White Pine County. To the extent that environmental conditions are “quality of life” factors affecting the residential choices of retirees, entrepreneurs, and working households with a high degree of flexibility in their employment situation, the potential improvements achieved under the Proposed RMP would diminish the adverse influences of the current conditions and trends. The temporal relationships between the implementation of the Proposed RMP, responses and changes in ecological health, potential indirect effects on population change, as well as the magnitude of such population changes, are unknown.

Population effects associated with the Proposed RMP, particularly those changes related to future growth associated with land disposals, dramatically could alter the demographic characteristics of the planning area, New residents may reflect a broad demographic cross-section in terms of age, race, workforce participation and household size, or may be less representative of the general population. In either case, they would be less connected to the social, cultural, and economic history of the area. Consequently, the influx of many year-round and seasonal residents would affect the social and community dynamics in the area.

Housing. Local housing markets would experience little direct impact under the Proposed RMP due to the limited scale of the anticipated population effects associated with ecological restoration efforts. The incremental population growth and associated housing demand generally would be regarded as beneficial. The incremental demands on community infrastructure and public services also would be considered beneficial by contributing to higher utilization, efficiency, and local government fiscal capacity.

Indirect effects on local housing markets would arise from future residential development on lands disposed of under the Proposed RMP. These effects would be long-term, major, and would have both beneficial and adverse dimensions. While the timing and absorption of such lands is uncertain, such impacts are likely to occur first in Lincoln County, particularly around Pioche, Panaca, and Caliente, followed by White Pine County, particularly around Ely. Development around those communities could take advantage of and benefit the established community infrastructure. However, the level of potential residential development would require expanded infrastructure and service delivery capacity. Active housing markets in both Lincoln and White Pine counties would include both permanent residency and second-home/recreational use. Future development likely would expand the type, variety, and range of values of housing available within the area.

Social Values and Attitudes Regarding Public Land Management. The Proposed RMP responds to a broadly held perspective that ecological health current conditions and trends within the planning area are deteriorating and that commitment of substantial resources are necessary to arrest the rate of decline, begin restoration, and to achieve properly functioning conditions. While many stakeholders would view favorably the increased funding levels and accelerated process of assessment and adaptive management response, concerns regarding the effectiveness of the approach and lengthy period required for implementation may foster concerns among various stakeholders about the need for more immediate or short-term actions. For example, ranchers would oppose the reductions in livestock grazing privileges associated with the temporary closure for treatment, but who support the possible allocation of additional post-treatment forage to grazing would see the short-term impacts as detrimental to their own sense of social and economic well-being as well as that of their neighbors, and their collective descendants.

At the same time, many residents of the area would value the added emphasis directed towards fuels management and wildland fire risk reduction included in this alternative. As that effort is implemented, ranchers, home and business owners of properties closest to the urban/rural interface would sense feelings of relief. Many residents and non-resident familiar with the area also may value the expanded range of woodland and vegetation products available for personal use.

Local and tribal government officials interested in promoting economic development initiatives may support the designation of areas for possible disposal, though some still would consider it insufficient in quantity and not well sited to meet future needs.

Stakeholders interested in ecological restoration and resource protection, as well as some of those interested in increased opportunities for off-highway vehicle use, would experience some degree of dissatisfaction with the Proposed RMP, because it does not include the scale of management response they desire. For example, some groups and individuals interested in environmental restoration would like to see a complete and immediate cessation of grazing, more restrictions on off-highway vehicle travel, and the complete closure of more areas to all off-highway vehicle use. At the same time, individual off-highway vehicle enthusiasts and organizations may have preferred maintaining areas as open and fewer travel restrictions limiting use to designated roads and trails.

Changes in permit conditions for outfitters and guides under the Proposed RMP may cause concerns among both the outfitters and guides and those who are used to a guided hunting experience but with more flexibility. Differences in viewpoints would resonate with local officials, some of whom may see permit conditions as enhancing the industry and its economic contributions to the regions, others who have a stronger free-market orientation and may see conditions as intrusive.

Groups and individuals interested in resource protection would likely be skeptical or opposed to the emphasis on commercial activities, the expansion of recreation uses, particularly motorcycle and organized truck events, and the expanded designations of lands suitable for possible disposal, particularly those areas seen as having high recreation potential and other resource values. Others would see the consequences of possible land disposal as leading to an increased human presence in the area, adding to existing pressures on other resources that may pose a higher threat to the success of ecological restoration efforts.

Many stakeholders may view the Proposed RMP as a type of a middle ground; addressing a wide array of resource management issues and concerns and promoting multiple-use on a large-scale level.

Conclusion. The Proposed RMP would result in regional population increases of 510 to 560 residents during restoration, with corresponding positive long-term effects on local housing markets. The gains would be relatively more concentrated around Ely. Additional social benefits may be realized from stewardship contracting, the fuels management/wildland fire risk reduction, and potential for developed recreation associated with possible land disposal. This alternative may hold relatively less appeal for those desiring maximum emphasis on resource protection and rangeland health restoration. Additionally, long-term population growth facilitated by land disposal could result in fundamental, long-term changes in social conditions across the area.

Alternative A

Population and Demographics. The Nevada State Demographer's office has prepared statewide and county-specific population projections through the year 2020. The projections are based on the continuation of recent population and demographic trends, absent any growth associated with the recent land acts, and thus, can be viewed as generally consistent with Alternative A. As such, they provide an indication of expected future economic and social conditions in the region absent any major economic shocks, including changes in management activities of the Ely Field Office.

Lincoln County is projected to gain nearly 300 residents through 2020; a modest compounded annual growth rate of 0.3 percent (see **Table 4.23-1**). Those projections imply limited levels of net immigration to augment natural growth of the resident population but do not include allowances for future development in conjunction with the sale and development of lands associated with the Lincoln County Land Act. Such development could result in nearly 58,000 additional residents of Lincoln County over 20 years (BLM 2001c). The effects of the Lincoln County Land Act on Lincoln County population growth, demographics, and social conditions are unrelated to the RMP and would be undifferentiated across alternatives. In addition to the Lincoln County Land Act-related growth, land disposal under the other land acts could facilitate development of more than 35,000 additional dwellings in the planning area.

The corresponding baseline population projections for White Pine County call for long-term declines of more than 2,500 residents by 2020. About 80 percent of the projected decline would occur by 2010 with the rate of decline slowing thereafter. The location of two regionally important highways through the county, and the support for local trade and services establishments provided by the Ely State Prison, the stimulus provided by the recent reopening of the Robinson mine, and other state and federal government activities in the county, suggests that White Pine County's population may stabilize, rather than continuing to decline as projected. The implications of the projections are, however, for substantial net residential out-migration, with attendant effects on local housing markets and other social dimensions of the affected communities. Under such conditions, the median age of an area's population would tend to increase, and the number of school-age children would decline. These trends would be offset in the long-term by the effects of the recently passed White Pine County Conservation, Recreation, and Development Act of 2006, which could stimulate development through disposal of BLM-administered lands for a variety of private and public uses.

Population projections are not available for the Nye County portion of the planning area. Population declined between 1990 and 2000, at least partially in response to limited economic opportunity. Given the outlook for population declines in White Pine County in the near term, to which the Duckwater area maintains close economic and social ties, it is reasonable to expect some further declines.

Projected population changes in the planning area contrast sharply with those for Nevada where net gains of over 892,000 residents are projected statewide by 2020, raising the state's population to 2.91 million.

Housing. Housing is among the more important elements of community development and local socioeconomic conditions. To an extent, changes in housing conditions and markets serve as a proxy for changes in community infrastructure and functioning. Rapid growth and strong housing demand tends to be correlated with rising housing prices, the need for community infrastructure expansion, and increased pressure on community services, while falling demand and prices create strains as communities attempt to sustain services and economic vitality in the face of declining resources.

Alternative A would have little, if any, direct impact on the underlying markets for new housing in the region. Lincoln County's housing market would be comprised of three elements: 1) demand for permanent housing to accommodate new residents moving to the central portion of the county, 2) non-resident demand for homes for seasonal and recreational use, and 3) the potential development of lands in southern Lincoln County associated with the Lincoln County Land Act. The first two of these elements would affect private lands, primarily around Panaca, Pioche, and Caliente. The amount of land to support such development is limited, providing a need for additional lands. Lands identified for possible disposal to meet community expansion needs could satisfy such demand, provided lands are subsequently developed for residential, rather than agricultural, industrial, commercial, or other public uses. The demand for seasonal and recreational use homes could be adversely affected by the continued risk of wildland fires on nearby public lands and restrictions enacted on dispersed recreation and off-highway vehicle use in the wake of continued decline in ecological health.

Housing demand in White Pine County, absent development associated with land disposal actions, would decline over the long-term in response to the underlying expectations for population declines and out-migration that characterize Alternative A. The long-term trend could be punctuated by short-term increases in demand tied to renewed mineral development or other temporary or cyclical spikes in economic activity. Under the long-term trends of relatively weak demand, housing values would decline and vacancies could rise. The population declines would result in excess service capacity in public infrastructure, along with diminished fiscal capacity for upgrades, maintenance, and repairs. Public services also would be adversely affected as cutbacks are necessitated by the smaller population base and fiscal resources.

Land sales under the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts are congressionally mandated. Market forces would determine whether and when development proceeds, and the nature of that development. The impacts of that development on other development trends in Lincoln County and White Pine County are unclear, though they would contribute to the potential for long-term growth that more than offsets the long-term declines projected absent such development. As under the Proposed RMP, housing variety and the range of values would expand due to future residential development under Alternative A. The impacts on local housing markets of such development would be major, with both beneficial and adverse manifestations.

Residential development associated with land disposal would be of lesser consequence in Nye County due to the relatively limited development potential involved.

Social Values and Attitudes Regarding Public Land Management. Continuation of current management practices under Alternative A would be deemed by many stakeholders as being unresponsive to their multi-faceted and wide-ranging concerns. Whether local resident, non-resident recreation enthusiast, tribal interest, or a business or environmental organization, generally there is a broad consensus that current conditions and trends do not bode well for the long-term environmental, economic, and community well-being of the planning area. There is considerably less consensus regarding the priorities and desired outcomes for future management of the planning area. In part, this stems from the sheer size of the planning area and its pivotal role in the Great Basin ecological system. Not only does the large size provide an opportunity for stakeholders to influence management for a vast area in its own right, but the current RMP/EIS process is seen as providing a forum to influence management policies over much of the western U.S. One outfall of the attention directed toward the Ely RMP/EIS is that most stakeholders and interest groups see themselves as having something at risk, which may or may not promote consensus regarding the desired course of action.

Two trends emerge under the current management that generally characterize the implications of Alternative A in terms of the effects on social values and attitudes toward public land management. On the one hand are local individuals and groups whose economic livelihoods and quality of life are linked to public lands and those who visit the area frequently to hunt, recreate, experience, and enjoy the open space and scenic vistas. Many of these individuals believe that their opportunity to maintain their established use patterns, cultural ties, and other connections to the land are threatened by strict environmental resource protection. An implication of that eventuality is that these parties see themselves as bearing the brunt of forthcoming changes in management and that those changes generally are viewed as being adverse in nature. They are, therefore, inclined to support more active and aggressive management that stabilizes, and hopefully, restores ecological conditions over time to a point of supporting on-going multiple use across a large portion of the planning area.

A contrasting perspective of the need for action may be held by individuals and groups promoting more active restoration efforts from a more distant or detached vantage, be it scientific, cultural, emotional, or spiritual. Many among these stakeholders also recognize that environmental protections eventually would come into play across broad segments of the planning area. However, there are potentially avoidable adverse consequences associated with delays and the passage of time that motivate these stakeholders to support more active and aggressive restoration efforts. One such consequence is the increasing risk of wildland fires. Such fires would increasingly pose risks to communities, lives, and properties. While such risks raise concerns for local residents, property owners, and officials, the consequences of wildland fires on ecological resources also can be devastating and are something to be avoided, if possible.

It is the shared motivation that changes in management are necessary to address concerns that Alternative A fails to address.

Conclusion. Long-term moderate population declines in White Pine County and moderate to major population increases in Lincoln County are projected under Alternative A absent the indirect growth associated with proposed land disposals and subsequent development. Subsequently, housing demand and prices would fall in White Pine County, while increasing in Lincoln County. Residential development in Lincoln County would increase concerns about wildland fire risks. Continuation of current management practices would be widely perceived as unresponsive to public concerns regarding declining ecological health in the Great Basin and the implications for public land use. Potential long-term development facilitated by land disposal actions under Alternative A would counteract the underlying projections and result in long-term population growth which would be accompanied by changing social dynamics in the planning area.

Alternative B

Population and Demographics. Under Alternative B, the combination of $10 million in annual funding of ecological restoration activities and the implementation of stewardship contracting would result in population gains larger than the 510 to 560 residents identified under the Proposed RMP. The magnitudes and timing of the incremental gains generally would correspond to the employment effects associated with such contracting, which are presently unknown. Other population and demographic effects in the planning area, including effects on the three American Indian reservations and the effects associated with possible land disposal and improving ecological health, would be more pronounced than those described for the Proposed RMP with capacity for more than 100,000 additional dwelling units under Alternative B. That total represents nearly a 15-fold increase over the aggregate housing stock of Lincoln and White Pine counties in 2000. Realization of that level of development during the life of this plan is extremely unlikely.

Housing. Under Alternative B, major impacts on local housing markets and conditions, including indirect effects associated with potential future residential development on disposed lands would occur and would be similar to those described for the Proposed RMP. The impact of that development on other development trends in Lincoln County and White Pine County is unclear, though it would contribute to the potential for long-term growth that offsets the long-term declines projected absent such development. As under the Proposed RMP, housing variety and the range of values would expand over the long-term due to future residential development under Alternative B.

Social Values and Attitudes Regarding Public Land Use Management. Alternative B responds to a broadly held perspective that current conditions and trends in ecological health require a substantial commitment of agency resources to arrest the rate of decline and begin restoration of properly functioning conditions across much of the planning area. While many stakeholders would view favorably the increased funding levels and accelerated process of assessment and adaptive management response, the uncertainties regarding the effectiveness of that approach and the lengthy time required for implementation and the resulting ecological responses could foster concerns among various stakeholders about potential short-term effects. For example, ranchers would oppose the reductions in livestock grazing privileges associated with the closure of the Mojave Desert to grazing and the emphasis given towards expanding the ranges and populations of desert and Rocky Mountain bighorn sheep, particularly given the lack of future forage allocations to livestock grazing as standards for rangeland health are achieved. They would see this as detrimental to their own sense of social and economic well-being, as well as that of their neighbors and their collective descendants.

At the same time, many residents (e.g., ranchers, home, and business owners closest to the urban/rural interface) of the area would value the added emphasis directed towards fuels management and wildland fire risk reduction included in Alternative B. Many residents and non-residents familiar with the area also would value the expanded range of forest/woodland and other plant products available for personal use.

Local and tribal government officials interested in promoting economic development initiatives would support the designation of areas for possible disposal, though some still would consider it insufficient to meet future needs.

Stakeholders interested in ecological restoration and resource protection, as well as some of those interested in increased opportunities for off-highway vehicle use, would experience some degree of dissatisfaction with Alternative B, because it may not include the scale of management response they desire. For example, some groups interested in environmental restoration would like to see a complete and immediate cessation of grazing. At the same time, individual off-highway vehicle enthusiasts and organizations may prefer maintaining more open use areas, fewer travel restrictions limiting use to designated roads and trails.

Conclusion. Alternative B management actions related to restoration would increase regional population by 510 to 560 residents. Generally perceived as beneficial, the gains would be relatively more concentrated around Ely. By accelerating the pace of restoration and improved ecological health, Alternative B would contribute to potential long-term population growth over and above that under Alternative A. Long-term population growth facilitated by land disposal could result in fundamental, long-term changes in social conditions across the planning area. Higher population growth would bolster housing markets in White Pine

County. Many would view the increased restoration funding levels favorably, but would be concerned about short-term impacts on lifestyles and personal use, and future management as rangeland health standards are achieved. Alternative B may hold relatively stronger appeal to those favoring resource protection and restoration.

Alternative C

Population and Demographics. The population effects of Alternative C would be comparable to those identified for the Proposed RMP; a net incremental increase over Alternative A supported by the additional $5.0 million in annual operating budget for the Ely Field Office. Implementation of stewardship contracting would spawn additional population gains. The magnitudes and timing of the gains generally would correspond to the employment effects associated with such contracting, which are presently unknown.

A secondary consequence of emphasizing responsible commercial development of forest/woodland and other plant products, organized motorized recreation events, and the expanded options of lands designated as suitable for possible disposal is a higher likelihood of stimulating induced economic and population growth beyond that associated directly with the rangeland health restoration initiative. Indirect effects on regional population change under Alternative C would be greater than under the other alternatives because of the increased acreage available for possible disposal. Most of the additional lands designated as eligible for possible disposal under Alternative C are near Ely, communities in Lincoln County, local airports, existing state parks, and other popular recreation areas. The location of these lands would promote interest for public and private sector recreation-oriented, commercial, and residential development, as well as possible agricultural uses. Such development would increase both the full-time residential populations and the seasonal and part-time residents. Criteria established to facilitate the orderly disposal of lands likely would result in paced disposal over time, with subsequent possible disposals contingent upon the utilization, market absorption, and development of previously disposed lands. The indirect effects on population growth would likely be concentrated in Lincoln County due to the proximity to the Las Vegas metropolitan area, Mesquite, and the Interstate 15 corridor.

The social well-being of the three Indian Reservations and respective tribal members and households would not be directly affected by possible land disposal or other aspects of Alternative C.

Population and demographic effects associated with future growth in the planning area in the wake of land disposal actions with capacity for more than 138,000 additional dwelling units would be more pronounced under Alternative C than those described for the Proposed RMP. That total represents a 20-fold increase over the aggregate housing stock of Lincoln and White Pine counties in 2000. As growth and development proceed, local population and demographics could undergo dramatic changes due to the influx of a large number of year-round and seasonal residents. Complete realization of the residential development potential accommodated by land disposal in Alternative C is extremely unlikely during the life of this plan.

Housing. Local housing markets would experience little direct impact under Alternative C because of the limited scale of population effects anticipated and the existing market conditions described under

Alternative A. The incremental demands on community infrastructure and public services also would contribute to higher utilization, efficiency, and fiscal support.

Major indirect effects on local housing markets would arise from future residential development on lands disposed under Alternative C. The timing and absorption of such lands is uncertain, but such effects would be more likely to occur around Pioche, Panaca, and Caliente in Lincoln County, and in areas in White Pine located near, and having access to, designated off-highway vehicle open use areas. The level of second-home development potentially could be much higher under Alternative C than other alternatives because of the proximity of possible disposal-eligible lands to established recreation areas.

A secondary consequence of new development in more remote locations would be to alter and increase demands on local governments, the Ely Field Office, and other public service providers. For example, increased residential and commercial development outside of the established communities in Lincoln and White Pine counties would increase demands on the sheriff's department, local fire protection, and, to the extent that they attract year-round residents, the school district. Increasing development also would generate additional management demands on Ely Field Office resources, including wildland fire protection, by introducing more development, recreation use, and a higher general level of human presence into areas previously undeveloped. The potential for large-scale demands on local government facilities and services is greatest in Alternative C due to the potential level of residential development supported by land disposals.

Social Values and Attitudes Regarding Public Land Management. Alternative C may garner support among the diverse stakeholders for the increase in spending to implement pro-active restoration efforts, including the use of commercial development and stewardship contracting to effect fuels management/wildland fire risk reduction and other environmental and recreation opportunity restoration and enhancement goals. Because such efforts may promote increased vegetation production and the availability of wood products biomass near local communities, local officials interested in community development likely would favor Alternative C over the other alternatives. Ranchers affected by closure of allotments within the Mojave Desert would oppose this reduction in livestock grazing privileges. Many off-highway vehicle users and other outdoor recreation enthusiasts would prefer the increase in recreation opportunities, less restrictive off-highway vehicle use designations, and private development afforded by the expanded offerings of land designated as suitable for possible disposal, relative to the other alternatives.

Groups and individuals interested in resource protection likely would be skeptical or opposed to the emphasis on commercial activities, the expansion of recreation uses (particularly motorcycle and organized truck events), and the expanded designations of lands suitable for possible disposal under Alternative C, particularly those areas seen as having high recreation potential and other resource values. Others would view the consequences of possible land disposal as leading to an increased human presence in the area, adding to existing pressures on other resources that may pose a higher threat to the success of ecological restoration efforts.

Many stakeholders may view Alternative C as a type of a middle ground; addressing a wide array of resource management issues and concerns, promoting multiple-use on a large-scale level, while avoiding many management options that might be viewed as extreme by one or more interest groups. This is not to characterize Alternative C as representing any type of a consensus, but rather as an alternative that offers many stakeholders something that they favor or can support.

Conclusion. Alternative C restoration activities would increase regional population by 190 to 210 residents. The gains and corresponding benefits on local housing markets would be concentrated around Ely. Indirect benefits from long-term commodity use, stewardship contracting, and expanded options for land disposal would result in long-term social benefits and adverse impacts due to the scale of potential long-term growth. The management emphasis for Alternative C may hold less appeal to stakeholders desiring stronger resource protection, sportsmen, and those favoring commercial uses of forest/woodland and other plant products than to interests promoting motorized recreation.

Alternative D

Population and Demographics. Direct population effects of Alternative D would be similar to those described for Alternative A; long-term population declines in White Pine County, a stable or declining population in the eastern portion of Nye County, and limited growth in Lincoln County, all absent development resulting from the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts. The land disposal assumptions under Alternative D could result in potential residential development of about 15,300 dwelling units in the planning area. The timing of development, and types and values of housing to be developed is uncertain. Realization of the full development is unlikely to occur during the life of this plan. Future residential development on disposed lands likely would result in increased year-round and seasonal populations within the planning area.

No direct population effects would occur on any of the three Indian Reservations under Alternative D.

Housing. Alternative D would have little direct, but potentially major long-term indirect impacts on local housing conditions or markets.

Social Values and Attitudes Regarding Public Land Management. The effect of Alternative D in terms of social values and attitudes is in large measure the counter-point to Alternative C. Alternative D carries forward several elements of Alternative A, but is dramatically different with respect to constraints on and levels of resource use. Hence, many stakeholders may view this alternative as non-responsive to their concerns about the impacts of future management on their economic and social well-being. Among the few discrete impacts associated with Alternative D would be opposition by many residents and local government officials to the no net loss of public lands provision and the elimination of livestock grazing that would be viewed as constraining future economic and community development. Those same provisions may be supported in principle by environmental advocacy interests, or possibly seen as restricting the potential for land exchanges and other actions involving lands managed by the Ely Field Office to achieve more desired environmental protection and management goals.

Conclusion. Alternative D would have little direct impact on regional population or housing markets, as compared to Alternative A. Alternative D carries forward several elements of Alternative A, but eliminates livestock grazing and places additional constraints on possible land disposal, mineral entry, and energy development that are viewed by residents as imperative to community and economic viability. Consequently, this alternative would hold relatively less appeal for area residents and local government officials than for those stakeholders whose specific areas of concern serve as the foundation for this alternative. Alternative D would support the least amount of residential development associated with land disposals, and thereby potentially would introduce the least influence on social dynamics within the planning area.

4.25 American Indian Issues

During the scoping process, several concerns were expressed by American Indian groups residing in or adjacent to the planning area. Foremost was the continuation of pinyon pine nut harvesting for personal and commercial use, followed closely by continued access to harvesting areas and places of spiritual or cultural importance, land disposals, and limitations on outfitter and guide permits and its effect on those tribes that offer guide services. Pinyon pine nut harvesting by American Indians for personal use, as well as access to places of spiritual or cultural importance, would continue under all of the alternatives. For a discussion on land disposals and the effect on the social and economic conditions of American Indian groups, the reader is referred to Section 4.24, Social Conditions. The proposed monitoring of the use and number of outfitter and guide permits for a 3-year period followed by implementation of stipulations and conditions on permits as necessary to protect resources and reduce user conflicts is not expected to disproportionately affect American Indian participants in this industry. The potential use of a competitive bidding process for issuing such permits under Alternative B, however, would be more likely to create disproportionate economic hardship for American Indian participants than for other groups involved in outfitting and guiding. Because Alternatives A and C would have no limits on issuance of outfitter and guide permits, they would have no effect on American Indian participants. Under Alternative D, no outfitter and guide permits would be issued, thus, affecting all participants in the industry.

Impacts associated with American Indian traditional values and their management would be mitigated through the Section 106 government-to-government consultation process. The 1992 National Historic Preservation Act amendments place major emphasis on the role of American Indian groups in the Section 106 review process. Subsequent revisions to the regulations of the Advisory Council on Historic Preservation published May 18, 1999, incorporate specific provisions for federal agencies to involve American Indian groups in land or resource management actions and for consulting with these groups throughout the process. Before making decisions or approving actions that could result in changes in land use, physical changes to lands or resources, changes in access, or alienation of lands, federal managers must determine whether American Indian interests would be affected, observe pertinent consultation requirements, and document how this was done. The consultation record would be the federal agency's basis for demonstrating that the responsible manager has made a reasonable and good faith effort to obtain and consider appropriate American Indian input in decision making.

In the event that human remains, funerary items, sacred objects, or objects of cultural patrimony are discovered during activities associated with management actions, the activities would cease in the immediate vicinity and the authorized officer would be notified of the find. The activities would continue after the authorized officer issues a notice to proceed (see Appendix F, Section 1).

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. After completion and approval of the RMP, during project implementation, additional mitigation

measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

4.26 Environmental Justice

Impact Issues

Executive Order 12898, "Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations," requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The BLM's goal when environmental justice issues arise is to reduce, to the extent practicable, inequitable distributions of environmental benefits and costs, based on race, ethnicity, or income. The Ely Field Office has a proactive program to promote and provide opportunities for full involvement of Tribes in local decisions that may affect their lives, livelihoods, and health (see Section 5.2 for more information about the tribal Consultation effort conducted as part of the Proposed RMP effort.)

Assumptions for Analysis

Completion of the watershed analysis and vegetation treatment programs will be long-term endeavors, with many long-term results not realized during the anticipated life of the Ely RMP. The lengthy time horizon and uncertain sequencing and priorities associated with watershed analysis and restoration activities precludes detailed analysis of potential adverse impacts to minority or low income populations due to the alternatives. Consequently, the Ely Field Office will seek to reduce or mitigate such impacts through the following policies.

- During the watershed analysis and treatment programs, the Ely Field Office will continue its efforts to allow subsistence activities by American Indians on public lands and avoid disproportionate adverse impacts on minority or low-income populations.

- Priorities for watershed analysis and treatments will be based on consistent application of decision criteria grounded in the best available scientific information, with consideration of the spatial distribution across the entire decision area in order to avoid temporal and spatial concentration of beneficial or adverse impacts disproportionately affecting an individual or group.

- The Ely Field Office will consider the potential incidence (magnitude, duration, and relative importance) of short and long-term adverse impacts associated with its treatment programs in its allocation of short and long-term benefits of restored healthy ecological systems.

- Within the frameworks established by BLM policies and applicable laws, the Ely Field Office will promote the training and employment of qualified minority and low-income residents to participate in the watershed analysis and treatment programs.

Interactions with Other Programs

Management of other resources has the potential to cause environmental justice issues. Thus, other management actions were examined to identify potential areas of concern.

Goal

Continue efforts to avoid, to the extent practicable, inequitable distributions of adverse environment impacts that may arise based on race, ethnicity, or income.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

American Indians within and outside the planning area have subsistence use (e.g., pinyon nut harvesting) and cultural ties to public lands administered by the Ely Field Office. The Proposed RMP would maintain those current ties, inter-governmental coordination efforts, and programs to protect cultural values, and provide for continued access to places of spiritual and cultural importance and to vegetation products.

Several geographical areas of interest to American Indians were identified through interviews and meetings with American Indian tribal leaders and members. If a land use decision was proposed in a geographical area of interest to the Tribes, the Ely Field Office would take into account any concern raised by the Tribes and work with them to address those concerns.

Conclusion. No significant, adverse, or disproportionately high environmental or health effects to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management actions associated with the Proposed RMP.

Alternative A

Environmental justice issues would be the same as described for the Proposed RMP.

Conclusion. No disproportionate adverse impacts to low-income populations were identified in conjunction with the resource programs or management actions associated with Alternative A. Alternative A would meet the goal for environmental justice.

Alternative B

Environmental justice issues would be the same as described for the Proposed RMP.

Based on their established or prospective patterns and locations of use, individuals, households, and groups of individuals who engage in recreation and subsistence uses in the decision area could be temporarily affected by management actions associated with the watershed analysis and treatment/restoration programs, which affect access, harvest limits, seasonal use, or levels of approved grazing.

Conclusion. No significant, adverse, or disproportionately high environmental or health impacts to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management actions associated with Alternative B.

Alternative C

Environmental justice issues would be the same as described for the Proposed RMP.

Conclusion. No significant, adverse, or disproportionately high environmental or health impacts to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management direction associated with Alternative C.

Alternative D

Environmental justice issues would be the same as described for the Proposed RMP.

Conclusion. No significant, adverse, or disproportionately high environmental or health impacts to minority or low-income populations were identified in conjunction with the resource programs, objectives, or management direction associated with Alternative D.

4.27 Health and Safety

Impact Issues

Remediation of contaminated and hazardous sites is necessary for compliance with applicable federal and state rules and regulations governing the remediation of such sites.

Assumptions for Analysis

None.

Interactions with Other Programs

It is expected that the health and safety management program within the planning area potentially would be minimally affected by actions within other resource management programs except for vegetation and fire management.

Goal

The goal of the health and safety program is to ensure that management actions are protective of life and property.

Mitigation Measures

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Impacts to health and safety also would be mitigated through the best management practices listed in Appendix F, Section 1. Best management practices would be implemented by the Ely Field Office on a project-specific basis, as appropriate for the specific characteristics of the project area and the types of disturbance being proposed. After completion and approval of the RMP, during project implementation, additional mitigation measures may be identified, as appropriate, on a site-specific basis. These measures would be identified through the site-specific NEPA analysis in response to anticipated impacts associated with proposed projects.

Proposed RMP

Impacts from Health and Safety Management Actions. Activities under this alternative would be conducted in accordance with applicable regulations and BLM policy with regard to health and safety and protection of personal property. All programs managed by the Ely Field Office would operate under these basic rules and procedures. More stringent procedures could be instituted by the Ely Field Office for certain activities on a case-by-case basis, although none are proposed for this alternative. As a result, there would be no program-specific impacts for health and safety under this alternative.

Impacts from Other Programs. Minimal effects to health and safety have been identified as a result of management activities associated with other resource management programs.

Vegetation/Fire Management. Vegetation treatments, including fuel reduction in wildland urban interface areas, and fire management plans of this alternative would substantially reduce the long-term risk of large-scale wildland fires and the risk of personal injuries and destruction of personal property associated with wildland fires. The revised Fire Management Plan facilitates prompt fire response and improves guidance and direction for fire use in each Fire Management Unit. Although concern was raised during public scoping regarding emission of radionuclides during wildland fires, there is no evidence that this would occur at a level constituting a health risk (see Section 4.2).

Conclusion. There would be a decrease of risk to public health and safety because of the decreased wildland fire risk. The Proposed RMP would meet the goal for the health and safety program.

Alternative A

Impacts from Health and Safety Management Actions. Impacts would be the same as the Proposed RMP.

Impacts from Other Programs. Minimal effects to health and safety have been identified as a result of management activities associated with other resource management programs.

Vegetation/Fire Management. Fuel supplies would continue to increase, leading to increased wildland fire risk. Risks are primarily related to personal injury and physical destruction of property associated with wildland fires.

Conclusion. There would be a slight increase of risk to public health and safety because of an increased wildland fire risk. Alternative A would meet the goal for the health and safety program.

Alternative B

Impacts from Health and Safety Management Actions. Impacts would be the same as the Proposed RMP.

Impacts from Other Programs. Minimal effects to health and safety have been identified as a result of management activities associated with other resource management programs.

Vegetation/Fire Management. Vegetation treatments, including fuel reduction in wildland urban interface areas, and fire management plans of this alternative would substantially reduce the long-term risk of large-scale wildland fires and the risk of personal injuries and destruction of personal property associated with wildland fires. The revised Fire Management Plan facilitates prompt fire response and improves guidance and direction for fire use in each Fire Management Unit. Although concern was raised during public scoping regarding emission of radionuclides during wildland fires, there is no evidence that this would occur at a level constituting a health risk (see Section 4.2).

Conclusion. There would be a decrease of risk to public health and safety because of decreased wildland fire risk. Alternative B would meet the goal for the health and safety program.

Alternative C

Impacts from Health and Safety Management Actions. Impacts would be the same as the Proposed RMP.

Impacts from Other Programs. Minimal effects to health and safety have been identified as a result of management activities associated with other resource management programs.

Vegetation/Fire Management. Vegetation treatments focused on removal of large fuels would be less extensive than in Alternative B. The continued accumulation of fuels in untreated areas coupled with wildland fire suppression of this alternative would ultimately lead to major wildland fire risks and the associated risks of personal injuries and destruction of personal property.

Conclusion. There would be an increase of risk to public health and safety because of increased wildland fire risk. Alternative C would not meet the goal for the health and safety program.

Alternative D

Impacts from Health and Safety Management Actions. Impacts would be the same as the Proposed RMP.

Impacts from Other Programs. Minimal effects to health and safety have been identified as a result of management activities associated with other resource management programs.

Vegetation/Fire Management. This alternative would combine minimal fire suppression efforts with very limited vegetation treatments. Thus, major large-scale wildland fire events and increased fire risk and personal injuries and destruction of property associated with wildland fires would be expected over the long term and may occur during the short term.

Conclusion. There would be a great increase of risk to public safety because of the increased wildland fire risk and the potential for large destructive fires. Alternative D would not meet the goal for the health and safety program.

4.28 Cumulative Impacts

4.28.1 Introduction

Cumulative impacts are those effects on the environment that result from the incremental impacts of the management direction contained in the RMP when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency (federal, tribal, state, or local) or private entity undertakes such other actions. Cumulative impacts can result from individually inconsequential, but collectively significant, actions taking place over a period of time (Title 40 Code of Federal Regulations Subpart 1508.7). This analysis focuses on the cumulative impacts of the Proposed RMP and other actions both within and outside of the planning area. A qualitative description of the differences in cumulative impacts between the Proposed RMP and other alternatives (Alternative A through Alternative D) also is included.

Nevada BLM Instruction Memo NV-90-435 specifies that impacts must first be identified for the proposed action (i.e., the Proposed RMP) before cumulative impacts with other actions can occur. According to the BLM's "Guidelines for Assessing and Documenting Cumulative Impacts" 1994 handbook, cumulative impact analysis should be focused on those issues identified during scoping that are of major importance, in this case the cumulative impacts of new management actions.

4.28.1.1 Assumptions for Cumulative Impact Analysis

- Based on an assumed 5 acre-feet per acre per year for areas currently cultivated in the planning area, there would be an ongoing water demand of 320,000 acre-feet per year for agricultural development.

- Based on an assumed 10 gallons per animal unit per day for livestock and wild horses in the planning area, there would be an ongoing water demand of 550 acre-feet per year for livestock grazing and wild horse management.

- Residential development is assumed to have a water demand of 1 acre-foot per acre of development per year.

- The Lincoln County and White Pine County Conservation, Recreation, and Development Acts will allow for the disposal of lands administered by the Ely Field Office within the planning area. A portion of the land disposed of could be used for residential development. For very general analysis purposes, it has been assumed that 27,900 dwelling units would be constructed on 18,600 acres in White Pine County and 86,100 dwelling units on 57,400 acres in Lincoln County. Since many of these dwelling units could have recreational or seasonal occupancy, it has been assumed that each dwelling unit would have one full-time resident. Further, it is assumed that the timeframe for this residential development would exceed the life of the Proposed RMP, something on the order of 50 years.

- Based on an assumed 10-foot-wide increase in width, the paving of Kane Springs Road would result in a new surface disturbance of approximately 50 acres.

- Based on an assumed 80-mile-long, 100-foot-wide construction right-of-way, the road from Caliente to Mesquite would result in a new surface disturbance of approximately 970 acres.
- Based on an assumed 1,400-acre site; 20 miles of water pipeline on a 60-foot-wide construction right-of-way; a 2-mile-long, 100-foot-wide rail spur right-of-way; a 34-mile-long, 200-foot-wide transmission line right-of-way; and 52 acres for access roads, electric distribution lines to water wells, construction staging areas, and construction access, new surface disturbance associated with the White Pine Energy Station is estimated at 2,450 acres.
- Based on an assumed 383-mile-long, 400-foot-wide right-of-way, transmission line construction in the Southwest Intertie Project corridor is expected to result in new surface disturbance of approximately 18,600 acres.
- Up to 5,000 megawatts of wind energy capacity would be developed in the planning area, and wind farms and ancillary facilities would have approximately 4,000 acres of temporary and permanent disturbance.
- Based on an assumed 100-mile-long, 200-foot-wide right-of-way within the planning area, the railroad branch line from Caliente, Nevada, to the Yucca Mountain Repository is expected to result in approximately 2,400 acres of new surface disturbance.

4.28.1.2 Timeframe for Analysis

The timeframe for this cumulative impact analysis encompasses past and present activities in the planning area, including historic mining which may date back more than 100 years, and future activities that may extend 20 years into the future.

4.28.1.3 Past, Present, and Reasonably Foreseeable Future Actions

Interrelated projects are defined for this EIS as those activities that could interact with the Proposed RMP in a manner that would result in cumulative impacts. For ease of presentation, interrelated projects and natural processes have been grouped as past, present, and reasonably foreseeable future actions that may interact with the management actions contained in the Proposed RMP. The potentially interrelated projects are listed and described below. **Table 4.28-1** quantifies four important characteristics of each project that are relevant to cumulative impacts. These characteristics were selected to describe the interrelated project because they address the potential physical, biological, and socioeconomic impacts of each project. It also allows the combined impacts of interrelated projects to be totaled. The interrelated projects are shown in **Map 4.28-1**, and **Table 4.28-2** identifies the potential interactions among the interrelated projects and the resource programs. The geographic area for cumulative impacts is determined primarily by the locations of the interrelated projects and the interactions with potentially affected resource programs. The area for certain resources may be restricted to the actual disturbance areas of the interrelated projects (i.e., cultural resources sites), while others may range over a wider area within and beyond the planning area (i.e., air quality).

Table 4.28-1
Impact Characteristics of Interrelated Projects and Natural Processes

Interrelated Project	Air Emissions[1]	Surface Disturbance within the Planning Area (acres)	Ongoing Water Demand within the Planning Area (acre-feet/year)	Permanent Employment within the Planning Area
Past Actions				
Human Actions				
• Atlanta mining district	Not Applicable	500	Not Applicable	Not Applicable
• Mount Hamilton/ White Pine mining district	Not Applicable	400	Not Applicable	Not Applicable
• Pioche mining district	Not Applicable	700	Not Applicable	Not Applicable
• Robinson mining district	Not Applicable	5,400	Not Applicable	Not Applicable
• Tempiute mining district	Not Applicable	200	Not Applicable	Not Applicable
• Nevada Test Site	Not Applicable	No Effect	Not Applicable	Not Applicable
• Road and railroad development	Not Applicable	28,100	Not Applicable	Not Applicable
• Agricultural development	Not Applicable	See Present Actions	Not Applicable	Not Applicable
• Livestock grazing	Not Applicable	(Minimal over 11.5 million acres open to grazing)	Not Applicable	Not Applicable
• Designation of critical habitat for threatened and endangered species	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Natural Processes				
• Wildland fire	Not Applicable	1.0 million (over 20 years)	Not Applicable	Not Applicable
• Expansion of pinyon and juniper trees	No Effect	No Effect	Increased Transpiration (not estimated)	No Effect (Not Applicable)
• Spread of noxious/ invasive weeds	Not Applicable	168,000	Not Applicable	Not Applicable
Subtotal	Not Applicable	603,300	Not Applicable	Not Applicable

Table 4.28-1 (Continued)

Interrelated Project	Air Emissions[1]	Surface Disturbance within the Planning Area (acres)	Ongoing Water Demand within the Planning Area (acre-feet/year)	Permanent Employment within the Planning Area
Present Actions				
Human Actions				
• Bald Mountain mining district	PM_{10}, oxides of nitrogen, carbon monoxide, and sulfur dioxide within National Ambient Air Quality Standards; process emissions less than 100 tons per year	4,200	2,000	100
• Reopening the Robinson Mine	Would meet New Source Performance Standards	No new area	5,700	430
• Reclamation of the McGill tailings	Fugitive dust	3,500	10,000	1
• Reid Gardner Power Plant (Clark County)	Coal-fired; PM_{10}, oxides of nitrogen, carbon monoxide, and sulfur dioxide emissions greater than 100 tons per year; Prevention of Significant Deterioration source within National Ambient Air Quality Standards	No Effect	No Effect	No Effect
• Department of Defense activities	No Effect	(Minimal over 691,000 acres of Nevada Test and Training Range within the planning area)	No Effect	No Effect
• Agricultural development	No Effect	64,000	320,000 (assuming 5 acre-feet/acre/year)	320 (split with livestock grazing)
• Livestock grazing	No Effect	(Minimal over 11.2 million acres open to grazing)	550 (assuming 10 gallon/animal unit/day for livestock and wild horses)	320 (split with agricultural development)
• Falcon to Gonder 345-kV transmission line	No Effect	1,200 (assuming a 160-foot-wide right-of-way)	No Effect	No Effect
• Conservation plans for greater sage-grouse	No Effect	Vegetation would be treated to improve habitat for greater sage-grouse but not possible to quantify area	No Effect	No Effect

Table 4.28-1 (Continued)

Interrelated Project	Air Emissions[1]	Surface Disturbance within the Planning Area (acres)	Ongoing Water Demand within the Planning Area (acre-feet/year)	Permanent Employment within the Planning Area
• Off-highway vehicle recreation use	No Effect	(Entire planning area open except designated wilderness and wilderness study areas)	No Effect	No Effect
Natural Processes				
• Wildland fire	Short term and seasonal	See Future Actions	No Effect	No Effect
• Drought	(Greater during drought)	No Effect	(Would decrease supply)	No Effect
• Expansion of pinyon and juniper trees	(Reduced ground cover)	No Effect	(Increased transpiration)	No Effect
• Spread of forest insects and diseases	(Reduced ground cover)	No Effect	(Reduced transpiration)	No Effect
• Spread of noxious/ invasive weeds	No Effect	No Effect	No Effect	No Effect
Subtotal	Not Applicable	**72,900**	**338,250**	**1,171**
Reasonably Foreseeable Future Actions				
Human Actions				
• Lincoln County Land Act development	No Effect	13,500	13,500	Unknown
• Lincoln County Conservation, Recreation, and Development Act	No Effect	Up to approximately 90,000		Unknown
• White Pine County Conservation, Recreation, and Development Act	No Effect	Up to approximately 45,000		Unknown
• Transfer of lands to American Indian Tribes	No Effect	Location and area to be determined by Congress	Unknown	Unknown
• Water development in Lincoln County and White Pine County	No Effect	3,000 (200 wells at 1 acre per well, and 300 miles of 75-foot-wide pipeline right-of-way)	Unknown	20
• Coyote Springs residential development	No Effect	20,000	20,000	Unknown
• Paving Kane Springs Road	No Effect	Approximately 50 acres assuming 10 feet of new disturbance	No Effect	No Effect
• Road from Caliente to Mesquite	No Effect	Approximately 970 acres assuming a 80-mile-long, 100-foot-wide construction right-of-way	No Effect	No Effect

Table 4.28-1 (Continued)

Interrelated Project	Air Emissions[1]	Surface Disturbance within the Planning Area (acres)	Ongoing Water Demand within the Planning Area (acre-feet/year)	Permanent Employment within the Planning Area
• Toquop Energy Project	Coal-fired; would meet New Source Performance Standards	500	2,500	110
• White Pine Energy Station	Would meet New Source Performance Standards	Approximately 2,450 (assumes 1,400 acres for site, 20 miles of water pipeline at 60 feet wide, 2 miles of rail spur at 100 feet wide, and 34 miles of transmission line at 200 feet wide)	5,000	150
• Ely Energy Center	Would meet New Source Performance Standards			
• Southwest Intertie Project Corridor	No Effect	Approximately 18,600 acres assuming a 383-mile-long, 400-foot-wide right-of-way	No Effect	No Effect
• Wind energy development	No Effect	4,000 permanent	No Effect	100
• Holly Energy Pipeline	No Effect	Approximately 200 acres assuming a 22.6-mile-long, 75-foot-wide construction right-of-way	No Effect	No Effect
• Expansion of the Bald Mountain Mine	Would meet New Source Performance Standards	3,800	1,100	100
• Barrick Land Sale	No Effect	14,770	Unknown	Unknown
• Expansion of the Panaca pozzolana mine	No Effect	200	No Effect	15
• Department of Defense activities	No Effect	(Minimal over 691,000 acres of Nevada Test and Training Range within the planning area)	No Effect	No Effect
• Yucca Mountain Project	No Effect	No Effect	No Effect	No Effect
• Department of Energy Caliente rail corridor	No Effect	Approximately 2,400 acres assuming a 100-mile-long, 200-foot-wide right-of-way within the planning area	Unknown	10
• Bassett Lake dam rebuild and expansion	No Effect	Unknown	No Effect (no new water use not already prior appropriated)	No Effect
• Cave Lake dam rebuild	No Effect	No Effect	No Effect	No Effect

Table 4.28-1 (Continued)

Interrelated Project	Air Emissions[1]	Surface Disturbance within the Planning Area (acres)	Ongoing Water Demand within the Planning Area (acre-feet/year)	Permanent Employment within the Planning Area
• Comins Lake expansion	No Effect	Lake surface would expand approximately 600 acres	Additional lake surface evaporation (Water use is already appropriated)	No Effect
• Habitat conservation plans for threatened and endangered species	No Effect	Could restrict surface disturbance in certain areas	No Effect	No Effect
• Conservation plans for greater sage-grouse	No Effect	Vegetation would be treated to improve habitat for greater sage-grouse but not possible to quantify area	No Effect	No Effect
• Increased off-highway vehicle use from population growth in Clark County	No Effect	(Limited to existing roads and trails, and 730,000 acres emphasized for use but not all disturbed)	No Effect	No Effect
Natural Processes				
• Wildland fire	Short term and seasonal	60,000	No Effect	No Effect
• Drought	No Effect	No Effect	(Would decrease supply)	No Effect
• Expansion of pinyon and juniper trees	No Effect	No Effect	(Increased transpiration)	No Effect
• Spread of forest insects and diseases	No Effect	No Effect	No Effect	No Effect
• Spread of noxious/ invasive weeds	No Effect	No Effect	No Effect	No Effect
• Spread of West Nile virus	No Effect	No Effect	No Effect	No Effect
Subtotal	**Not Applicable**	***781,130***	**46,600**	**345**
TOTAL	**Not Applicable**	***1,457,330***	**383,850**	**1,516**

Note: All quantification is approximate.

[1] Air emissions from mobile sources and those that would not extend beyond 2 miles would not have any substantial cumulative impact.

Table 4.28-2
Interactions Between Resources and Interrelated Projects

Interrelated Project	Air Quality	Water Resources	Soils	Vegetation	Fisheries	Wildlife	Special Status Plant Species	Special Status Aquatic Species	Special Status Wildlife Species	Wild Horses	Cultural Resources	Paleontological Resources	Visual	Lands and Realty	Renewable Energy	Travel Management/Off-highway Vehicle Use	Recreation	Livestock Grazing	Woodland and Native Plant Products	Mineral Extraction	Watershed Management	Fire Management	Noxious and Invasive Weed Management	Special Designations	Economic and Social Conditions	American Indian Issues	Health and Safety
Past Actions																											
Human Actions																											
• Atlanta mining district									X	X	X	X								X	X		X		X	X	X
• Mount Hamilton/ White Pine mining district									X	X	X	X								X	X		X		X	X	X
• Pioche mining district								X		X	X	X								X	X		X		X	X	X
• Robinson mining district			X	X		X			X		X	X						X	X	X	X		X		X	X	X
• Tempiute mining district										X	X	X								X	X		X		X	X	X
• Nevada Test Site											X	X		X						X					X	X	X
• Road and railroad development			X	X	X	X	X		X	X	X	X		X				X	X			X	X		X	X	
• Agricultural development					X	X	X	X	X	X	X			X							X		X		X		
• Livestock grazing			X	X	X	X	X	X	X	X	X		X					X	X		X	X	X		X	X	
• Designation of critical habitat for threatened and endangered species				X		X			X	X				X	X	X	X	X	X	X	X			X	X		

Table 4.28-2 (Continued)

Interrelated Project	Air Quality	Water Resources	Soils	Vegetation	Fisheries	Wildlife	Special Status Plant Species	Special Status Aquatic Species	Special Status Wildlife Species	Wild Horses	Cultural Resources	Paleontological Resources	Visual	Lands and Realty	Renewable Energy	Travel Management/Off-highway Vehicle Use	Recreation	Livestock Grazing	Woodland and Native Plant Products	Mineral Extraction	Watershed Management	Fire Management	Noxious and Invasive Weed Management	Special Designations	Economic and Social Conditions	American Indian Issues	Health and Safety
Natural Processes																											
• Wildland fire		X	X	X	X	X	X	X	X	X	X		X	X			X	X	X		X	X	X		X	X	
• Expansion of pinyon and juniper trees		X	X	X					X	X								X	X		X	X	X				
• Spread of noxious/ invasive weeds			X	X		X			X	X			X	X				X	X		X	X	X		X		
Present Actions																											
Human Actions																											
• Bald Mountain mining district	X	X	X	X		X			X	X	X	X	X						X	X	X		X		X	X	
• Reopening the Robinson Mine	X	X																		X	X		X		X	X	X
• Reclamation of the McGill tailings	X	X	X	X		X	X		X		X	X									X		X		X	X	X
• Reid Gardner Power Plant (Clark County)	X																								X	X	
• Department of Defense activities											X			X	X										X	X	
• Agricultural development		X	X	X	X	X	X	X	X	X	X			X				X			X		X		X		

Table 4.28-2 (Continued)

Interrelated Project	• Livestock grazing	• Falcon to Gonder 345-kilovolt transmission line	• Conservation plans for greater sage-grouse	• Off-highway vehicle recreation use	Natural Processes	• Wildland fire	• Drought	• Expansion of pinyon and juniper trees	• Spread of forest insects and diseases	• Spread of noxious/ invasive weeds
Health and Safety						X				
American Indian Issues	X	X		X		X				
Economic and Social Conditions	X	X		X		X				X
Special Designations				X						
Noxious and Invasive Weed Management	X	X		X		X	X	X	X	X
Fire Management	X		X	X		X	X	X	X	X
Watershed Management	X			X		X	X	X	X	X
Mineral Extraction			X							
Woodland and Native Plant Products	X					X	X	X	X	X
Livestock Grazing	X		X	X		X	X	X		X
Recreation				X		X				
Travel Management/Off-highway Vehicle Use			X	X						
Renewable Energy		X								
Lands and Realty		X	X	X		X	X			X
Visual		X				X	X			X
Paleontological Resources		X		X						
Cultural Resources	X	X		X		X				
Wild Horses	X	X	X	X		X	X	X		X
Special Status Wildlife Species	X		X	X		X	X	X	X	X
Special Status Aquatic Species	X			X		X	X			
Special Status Plant Species	X					X				
Wildlife	X		X	X		X	X		X	X
Fisheries	X			X		X	X			
Vegetation	X	X	X	X		X	X	X	X	X
Soils	X			X		X	X	X	X	X
Water Resources	X					X		X		
Air Quality				X		X	X			

Table 4.28-2 (Continued)

Interrelated Project	Air Quality	Water Resources	Soils	Vegetation	Fisheries	Wildlife	Special Status Plant Species	Special Status Aquatic Species	Special Status Wildlife Species	Wild Horses	Cultural Resources	Paleontological Resources	Visual	Lands and Realty	Renewable Energy	Travel Management/Off-highway Vehicle Use	Recreation	Livestock Grazing	Woodland and Native Plant Products	Mineral Extraction	Watershed Management	Fire Management	Noxious and Invasive Weed Management	Special Designations	Economic and Social Conditions	American Indian Issues	Health and Safety
Reasonably Foreseeable Future Actions																											
Human Actions																											
• Lincoln County Land Act development		X	X	X	X	X	X	X	X		X	X	X	X				X			X	X	X		X	X	
• Lincoln County Conservation, Recreation, and Development Act		X	X	X	X	X	X	X	X	X	X	X	X	X				X		X	X	X	X		X	X	
• White Pine County Conservation, Recreation, and Development Act		X	X	X	X	X	X	X	X		X	X	X	X				X		X	X	X	X		X	X	
• Transfer of lands to American Indian Tribes											X	X		X				X		X	X	X			X	X	
• Water development in Lincoln County and White Pine County		X	X	X	X	X	X	X	X		X	X		X				X		X			X		X	X	
• Coyote Springs residential development		X	X	X	X	X					X	X	X	X							X	X	X		X	X	

Table 4.28-2 (Continued)

Interrelated Project	Air Quality	Water Resources	Soils	Vegetation	Fisheries	Wildlife	Special Status Plant Species	Special Status Aquatic Species	Special Status Wildlife Species	Wild Horses	Cultural Resources	Paleontological Resources	Visual	Lands and Realty	Renewable Energy	Travel Management/Off-highway Vehicle Use	Recreation	Livestock Grazing	Woodland and Native Plant Products	Mineral Extraction	Watershed Management	Fire Management	Noxious and Invasive Weed Management	Special Designations	Economic and Social Conditions	American Indian Issues	Health and Safety
• Paving Kane Springs Road											X			X		X						X	X	X	X	X	
• Road from Caliente to Mesquite			X	X	X	X					X	X	X	X		X						X	X	X	X	X	
• Toquop Energy Project	X	X	X	X		X		X			X	X	X	X	X								X		X	X	
• White Pine Energy Station	X	X	X	X		X	X	X	X	X	X	X	X	X	X			X					X		X	X	X
• Ely Energy Center	X	X	X	X		X	X	X	X	X	X	X	X	X	X			X					X		X	X	X
• Southwest Intertie Project Corridor				X		X	X	X	X		X	X	X	X	X								X		X	X	
• Wind energy development			X	X		X	X		X	X	X	X	X	X	X				X				X		X	X	
• Holly Energy Pipeline	X	X	X	X		X	X	X	X	X	X	X	X	X	X			X					X		X	X	X
• Expansion of the Bald Mountain Mine	X	X	X	X		X			X	X	X	X	X	X					X	X	X		X		X	X	X
• Barrick Land Sale														X							X						
• Expansion of the Panaca pozzolana mine	X		X	X		X					X	X		X			X			X	X		X		X	X	X
• Department of Defense activities											X			X	X										X	X	

Table 4.28-2 (Continued)

Interrelated Project	• Yucca Mountain Project	• Department of Energy Caliente rail corridor	• Bassett Lake dam rebuild and expansion	• Cave Lake dam rebuild	• Comins Lake expansion	• Conservation plans for greater sage-grouse	• Habitat conservation plans for threatened and endangered species	• Increased off-highway vehicle use from population growth in Clark County	Natural Processes	• Wildland fire	• Drought
Health and Safety	X	X								X	
American Indian Issues	X	X	X	X	X			X		X	
Economic and Social Conditions	X	X	X	X	X			X		X	
Special Designations		X						X			
Noxious and Invasive Weed Management		X	X	X	X			X		X	X
Fire Management		X				X	X	X		X	
Watershed Management		X					X	X		X	X
Mineral Extraction		X				X	X				
Woodland and Native Plant Products		X								X	X
Livestock Grazing		X				X	X	X		X	X
Recreation		X	X	X	X			X		X	
Travel Management/Off-highway Vehicle Use	X	X				X		X			
Renewable Energy		X									
Lands and Realty	X	X	X		X	X	X	X		X	X
Visual		X								X	X
Paleontological Resources		X						X			
Cultural Resources	X	X						X		X	
Wild Horses		X				X	X	X		X	X
Special Status Wildlife Species		X				X	X	X		X	X
Special Status Aquatic Species		X						X		X	X
Special Status Plant Species		X	X		X			X		X	
Wildlife		X				X	X	X		X	X
Fisheries		X	X		X			X		X	X
Vegetation		X				X	X	X		X	X
Soils		X						X		X	X
Water Resources		X								X	
Air Quality		X						X		X	X

Table 4.28-2 (Continued)

Interrelated Project	Air Quality	Water Resources	Soils	Vegetation	Fisheries	Wildlife	Special Status Plant Species	Special Status Aquatic Species	Special Status Wildlife Species	Wild Horses	Cultural Resources	Paleontological Resources	Visual	Lands and Realty	Renewable Energy	Travel Management/Off-highway Vehicle Use	Recreation	Livestock Grazing	Woodland and Native Plant Products	Mineral Extraction	Watershed Management	Fire Management	Noxious and Invasive Weed Management	Special Designations	Economic and Social Conditions	American Indian Issues	Health and Safety
• Expansion of pinyon and juniper trees		X	X	X					X	X								X	X		X	X	X				
• Spread of forest insects and diseases			X	X		X			X				X						X		X	X	X				
• Spread of noxious/ invasive weeds			X	X		X			X	X			X	X				X	X		X	X	X		X		
• Spread of West Nile virus						X			X	X																	X

Past Actions

- Atlanta Mining District – The Atlanta Mining District was discovered in 1869 and included a historic underground and open pit gold and uranium mine located north of Pioche. Mining commenced in 1871 and continued intermittently until 1996 (Tschanz and Pampeyan 1970).

- Mount Hamilton/White Pine Mining District – The Hamilton or White Pine Mining District was located in 1865 and operations continued through the 1990s. This District experienced one of the largest mining rushes in U.S. history and produced silver, copper, lead, and zinc from underground and open pit mines located west of Ely in the White Pine Range (Hose et al. 1976).

- Pioche/Caselton Mining District – The Pioche/Caselton Mining District was discovered in 1863; production began in 1869 and continued until approximately 1960. Production from underground mines in the District, which was located in the Pioche Hills to the west of Pioche, included silver, zinc, gold copper, and lead (Tschanz and Pampeyan 1970).

- Robinson Mining District – The Robinson Mining District, which is one of the oldest and largest mining districts in the state, is located just west of Ely and dates back to 1867. Silver was the first commodity mined in the district, followed by gold. Copper mining began in 1908 and was active until approximately 1999 (Hose et al. 1976; BLM 1994b).

- Tempiute Mining District – The Tempiute Mining District began as a silver district and was developed from 1869 to 1883. Tungsten was discovered in 1916 and was ultimately mined from the 1930s to 1957 and again from 1977 to 1982. While currently inactive, the district has produced copper, lead, and zinc, in addition to silver and tungsten (Tschanz and Pampeyan 1970; Cox and Singer 1992).

- Nevada Test Site – This 1,375-square-mile area was originally established in the early 1950s as the Atomic Energy Commission's on-continent nuclear weapons proving ground. It lies contiguous with the Nevada Test and Training Range. A moratorium on nuclear weapons testing was implemented in 1992 and since that time, the site, which is located 65 miles north of Las Vegas, has diversified into many other programs such as hazardous chemical spill testing, environmental technology studies, conventional weapons testing, waste management, and emergency response training (U.S. Department of Energy 2004).

- Road and railroad development – Roads and railroads built in the planning area prior to the 1990s largely accommodated mining operations and supplied local communities. The Nevada Northern Ruth to Wendover line and the Union Pacific line from Caliente to Las Vegas are two historic rail lines located within the planning area.

- Agricultural development – Historic agricultural development in the planning area was generally associated with livestock and included irrigated hay pastures.

- Livestock grazing – Livestock grazing operations in the planning area developed during the mid- to late-1800s. Historic stocking rates were higher than present.

- Critical habitat has been designated for threatened and endangered species within the planning area. The most extensive designation involved the desert tortoise habitat in the Mojave Desert region of the southeastern part of the planning area. In the 2000 Desert Tortoise Amendment to the Caliente MFP, 203,670 acres were designated as three ACECs for the protection of designated critical habitat.

- Wildland fire – Over the 20 years between 1985 and 2005, wildland fire has burned approximately 400,000 acres within the planning area. The area burned varied greatly from year to year. In the year 2005, approximately 600,000 acres burned within the planning area.

- Expansion of pinyon and juniper trees and other woody species – Over the past 150 years, trees have increased in woodlands, spread into shrublands and grasslands, and are expected to continue expansion.

- Spread of noxious/invasive weeds – Noxious weeds have been spreading in the planning area to the point that approximately 168,000 acres managed by the Ely Field Office are now infested. Invasive annual grasses such as cheatgrass and red brome have become a primary problem over a much greater area.

Present Actions

- Bald Mountain Mining District – The Bald Mountain Mining District is located in White Pine County approximately 70 miles northwest of Ely, Nevada. The district dates back to 1869 with open pit gold mining and processing beginning in the 1980s (BLM 1995). Current operations are anticipated to continue through 2010 and beyond.

- Reopening the Robinson Mine – Quadra Mining Ltd. has purchased the Robinson Mine facilities east of Ely and resumed operations in the fourth quarter of 2004. Surface disturbance areas are expected to remain as identified in the 1994 EIS (BLM 1994b).

- Reclamation of the McGill tailings – The McGill tailings were generated through operations associated with a historic copper smelter and gravity separator located north of Ely. The smelter processed ore from 1908 to 1980, had 1,400 employees at its peak, and an 8.5-mile-long water supply pipeline (Hose et al. 1976). The tailings disposal area is currently undergoing reclamation.

- Reid Gardner Power Plant – Reid Gardner is a 590-megawatt, coal-fired power plant that was constructed in the mid-1960s just south of Moapa, Nevada. It is owned and operated by Nevada Power Company. Coal is delivered to the plant site via rail.

- Department of Defense Activities – The Military has used and would like to continue using the public lands in the planning area. A portion of the planning area lands fall under the Desert, Reveille, and

Gandy Military Operations Areas and several low-level Military Training Routes. The typical military uses are: overflights; fixed and rotary wing landing areas; Forward Air Refueling Points; electronic communication (fixed and mobile) and threat operations; Drop Zone operations (airdrops from 500 feet above ground level to 10,000 feet above ground level of equipment or personnel); no-drop visual-only convoy targets; and emergency access and response.

- Agricultural development – According to BLM's geographic information system database, approximately 63,800 acres are currently under agricultural production in the planning area. This amount includes irrigated hay pastures, row crops, grain crops, and orchards (BLM unpublished data).

- Livestock grazing – Approximately 11.2 million acres are currently available for grazing in the decision area. A total of approximately 545,267 animal unit months are permitted in the decision area, with approximately 206,707 animal unit months of use identified in 2002.

- Falcon to Gonder 345-kilovolt Transmission Line – A new 345-kilovolt transmission line has been constructed to connect the Falcon Substation (north of Dunphy and Battle Mountain, Nevada) to the Gonder Substation (north of Ely, Nevada). Reclamation is ongoing. Approximately 60 miles of the line lie within the planning area (BLM 2001h [Falcon to Gonder EIS]).

- Conservation plans for greater sage-grouse – The downward trend in population of the greater sage-grouse throughout the West resulted in petitions for listing the bird range-wide and locally as federally threatened or endangered. On January 4, 2005, the Secretary of the Interior announced that the greater sage-grouse did not warrant protection under the Endangered Species Act. However, implementation of conservation plans for greater sage-grouse within the planning area would include active management techniques to improve habitat quality for greater sage-grouse, maintain or increase management unit populations, and maintain or increase greater sage-grouse numbers.

- Off-highway vehicle recreation use – As large areas of BLM-managed land in Clark County are being closed to off-highway vehicle use due to measures taken to protect the desert tortoise and air quality, more recreation use has shifted to Lincoln and White Pine counties.

- Wildland fire – See Reasonably Foreseeable Future Actions.

- Drought – See Reasonably Foreseeable Future Actions.

- Expansion of pinyon and juniper trees and other woody species – Over the past 150 years, trees have increased in woodlands, spread into shrublands and grasslands, and are expected to continue expansion.

- Spread of forest insects and diseases – Several years of drought in western states have resulted in severe stress on pinyon pines. This stress has made the trees less able to fend off attacks by insects such as the Ips beetle. As mentioned in Section 3.5, white pine blister rust also is infecting and causing mortality in bristlecone pines north and west of the planning area. It is expected to infect neighboring mountains in the foreseeable future.

- Spread of noxious/invasive weeds – Noxious and invasive weeds continue to spread on all lands, both public and private, reducing natural biodiversity, vegetation production, and soil quality. Due to their tolerance of fire and rapid spread into burned areas, invasive annual grasses such as cheatgrass and red brome are expected to remain a serious long-term challenge in the planning area.

Reasonably Foreseeable Future Actions

- Lincoln County Land Act development – As mandated by the Lincoln County Land Act of October 13, 2000, the Ely Field Office disposed of 13,500 acres of public land located north and west of Mesquite, Nevada. The sold land would be used to expand the community of Mesquite, Nevada (BLM 2001c).

- Lincoln County Conservation, Recreation, and Development Act of 2004 – The Lincoln County Conservation, Recreation, and Development Act was signed into law on November 30, 2004. The Act authorizes the sale of up to 90,000 acres of BLM-administered land in Lincoln County, with 10 percent of the revenues going to Lincoln County for economic development, 5 percent to the state for education, and 85 percent being retained by the federal government. The Act also designates approximately 770,000 acres of wilderness.

- White Pine County Conservation, Recreation, and Development Act of 2006 – The White Pine County Conservation, Recreation, and Development Act was signed into law on December 20, 2006. The Act authorizes the sale of up to 45,000 acres of BLM-administered land in White Pine County, with 10 percent of the revenues going to White Pine County for economic development, 5 percent to the state for education, and 85 percent being retained by the federal government. The Act also designates approximately 558,000 acres of wilderness.

- Transfer of lands to American Indian Tribes – As part of the White Pine County Conservation, Recreation, and Development Act, four parcels of land totaling 3,526 acres were transferred in trust to the Ely Shoshone Tribe. Proposals for the transfer of public lands within the decision area also have been prepared by the Duckwater Shoshone Tribe and Moapa Band of Paiutes. The location and land area of any such transfers would be determined by Congress.

- Water development in Lincoln County and White Pine County – Groundwater development in Lincoln County and White Pine County may occur. Proposals by the Southern Nevada Water Authority and Lincoln County Water District are currently being evaluated by the Ely Field Office in separate EISs. It is anticipated that the water would be used in White Pine or Lincoln counties for industrial or residential development or would be transported to Clark County. Water development is regulated by the Nevada State Engineer and not by the BLM Field Offices.

- Coyote Springs residential development – This planned development of approximately 50,000 people would be located near the Clark and Lincoln County line on Highway 93. Approximately 20,000 acres are designated for the development (Hartmann 2004).

- Paving Kane Springs Road – This approximately 40-mile-long paving project, which would be located between Elgin, Nevada, and Highway 93 northwest of Moapa, would result in minimal land disturbance (slight widening of the existing roadway). The road lies on lands managed by both the Ely Field Office and Lincoln County (Hartmann 2004).

- Road from Caliente to Mesquite – This roadway would provide access to the Lincoln County Land Act area and to the Toquop Energy Project site. The road would involve new construction disturbance along an approximately 80-mile-long, 100-foot-wide construction right-of-way (Hartmann 2004).

- Toquop Energy Project – Toquop Energy, Incorporated has the permits required to construct and operate a 1,100-megawatt, natural gas-fired, water-cooled, electric generating plant in southeastern Lincoln County. The project includes a 12.5-mile-long waterline, 1,300-foot-long electric utility line, a 2,400-foot-long, 20-inch-diameter gas pipeline, and a 14.4-mile-long access road (Toquop Energy 2004). The current proposal is for a coal-fired unit with fuel being delivered by rail to replace the gas-fired unit. The reconfigured project would include a 750-megawatt plant, a 45-mile long rail spur from the Union Pacific mainline in Meadow Valley Wash, and permanent employment of approximately 110 workers. The coal-fired plant is anticipated to have a lower water usage, and the reduced size would bring air emissions more in line with the permitted gas-fired plant. This major revision in the project description requires a supplemental or new EIS before project development could begin (2,500 versus 7,000 acre-feet per year).

- White Pine Energy Station – White Pine Energy Associates, LLC, is proposing to construct a coal-fired power plant in north Steptoe Valley, about 30 miles north of Ely, Nevada, between McGill and Cherry Creek. The project consists of power generation units and related facilities, rail line, and transmission lines connecting northern and southern Nevada. Up to three 530-megawatt units (1,600-megawatts total) could be constructed. As part of the plan, the existing Nevada Northern Railroad would be used to transport coal to the site.

- Ely Energy Center – Sierra Pacific Resources is proposing a coal-fired power plant and related facilities, rail line, and transmission lines connecting northern and southern Nevada. The power generation facility would be located in north Steptoe Valley, about 20 miles north of Ely, Nevada, and would initially consist of two 750-megawatt generation units, with the first unit becoming operational in 2011. The second unit would be operational by 2014. Two 500-megawatt coal gasification units also would be constructed, when the technology becomes commercially viable.

- Southwest Intertie Project Corridor – The Southwest Intertie Project was originally proposed as a 540-mile-long 500-kilovolt transmission line from Idaho to termination points in southern Nevada and Delta, Utah. A right-of way for the project was granted in the 1990s (BLM 2001h), but the project was never constructed. However, approximately 383 miles of the Southwest Intertie Project corridor were maintained in the Ely planning area as a designated corridor. Two entities currently are considering use of the Southwest Intertie Project corridor for the construction of north-south transmission lines across the planning area. These are the Great Basin LLC 500-kilovolt line and the TransCanada direct current line.

- Wind energy development – The potential for wind energy development exists within the planning area. Based on Department of Energy evaluation of wind energy potential and current interest within the planning area, up to 40,000 acres of rights-of-way for wind farms could be granted during the life of the RMP. This would accommodate approximately 5,000 megawatts of generating capacity. Entities currently investigating wind energy projects in the planning area (from north to south) include: Nevada Wind (Antelope Range), Power Partners Wind (Diamond Range), Nevada Wind (Egan Range), Enxco Wind (Egan Range), Invenergy Wind (north Spring Valley), Spring Valley Wind (north Spring Valley), Nevada Wind (Schell Creek Range), and Table Mountain-Mount Wilson Wind (Wilson Creek Range).

- Holly Energy is proposing to construct a 12-inch-diameter refined liquids (gasoline and diesel fuel) pipeline from the Salt Lake City area to the Las Vegas area. This pipeline would be constructed in the existing Moapa corridor across the southeast corner of the planning area. Approximately 22.6 miles of the project would cross lands administered by the Ely Field Office.

- Expansion of the Bald Mountain Mine – Barrick Gold Corporation is planning to increase the size of the existing Bald Mountain Mine to enable it to continue mining and gold production for an additional 6 to 10 years. Bald Mountain Mine proposes an additional disturbance of 3,800 acres associated with pits, rock disposal areas, heap leaching, roads, growth media stockpiles, exploration, and underground mining activities. The Proposed North Operations Area would include the 4,200 acres of previously permitted disturbance and 3,800 acres of new disturbance, for a final disturbance footprint of about 8,000 acres. The North Operations Area EIS would incorporate existing analysis that includes several environmental assessments and the 1995 Bald Mountain Mine Expansion EIS.

- Barrick Land Sale – The proposed Northern Nevada Rural Economic Development and Land Consolidation Act of 2003 (H.R. 2869) may direct the Ely Field Office to sell approximately 14,770 acres of land located on Alligator Ridge and Bald Mountain in White Pine County to Barrick Gold Corporation.

- Expansion of the Panaca pozzolana mine – This existing, small-scale mine could be expanded. Pozzolana is a finely divided volcanic ash mineral composed of silica and aluminum that reacts chemically with lime, in the presence of moisture and at ordinary temperature, to form a strong, slow-hardening cement.

- Department of Defense activities – Military operations are described above in the past actions section and are expected to continue through the next 20 years.

- Yucca Mountain operations – On July 9, 2002, the U.S. Senate cast the final legislative vote approving the development of a deep underground facility, or repository, at Yucca Mountain, Nevada, for storage of highly radioactive nuclear waste. The repository is anticipated to store waste for at least

10,000 years. The Yucca Mountain Project is currently focused on preparing an application to obtain a license from the U.S. Nuclear Regulatory Commission to construct the repository. No construction date has been set (Office of Civilian Radioactive Waste Management 2004).

- Department of Energy Caliente rail corridor withdrawal – Approximately 308,600 acres in Clark, Esmeralda, Lincoln, and Nye counties has been withdrawn from surface entry and mining for a period of 20 years. During this period the land would be evaluated for potential construction, operation, and maintenance of a 307-mile-long branch rail line for the transportation of spent nuclear fuel and high-level radioactive waste to the proposed Yucca Mountain Repository (Office of Civilian Radioactive Waste Management 2004). Approximately 100 miles of the proposed railroad corridor would be within the planning area. The Department also is evaluating a rail route in western Nevada (the Mina corridor) that does not cross the planning area.

- Bassett Lake is a 77-acre reservoir located northwest of McGill, Nevada, on property owned by Kennecott Minerals Company. Discussions are underway among Kennecott, the Nevada Department of Wildlife, and White Pine County regarding the conversion of the lake from private to public ownership. It has been proposed that the dam creating the reservoir could be rebuilt and the pool size enlarged. Details on the project await resolution of ownership issues and a detailed engineering study.

- Cave Lake dam rebuild – The proposed project would repair the dam at the lake, probably between 2005 and 2007. No additional surface disturbance would be required, the lake would not increase in size, and fewer than 50 people are expected to be involved in construction (Richards 2004).

- Comins Lake expansion – Comins Lake south of Ely provides a productive year-round recreational fishery. Nevada Department of Wildlife is proposing to increase the area of Comins Lake for recreation purposes, effectively doubling its size to about 1,000 acres. A recent study evaluated reinforcing the existing roadway (Highway 93) at the lake crossing to act as a dam. The project is expected to be implemented in 2007 to 2008 (Richards 2004).

- Habitat conservation plans for threatened and endangered species – New habitat conservation plans could be developed for currently listed species. If additional species are listed as threatened or endangered, habitat conservation plans also would be developed for designated critical habitat within the planning area. It is anticipated that if new listings become necessary, they would most likely involve species that are dependent on sagebrush for their habitat requirements.

- Conservation plans for greater sage-grouse – See Present Actions.

- Increased off-highway vehicle use from population growth in Clark County – Off-highway vehicle use has shifted to Lincoln and White Pine counties as areas of BLM-administered public land in Clark County have been closed. As the population of Clark County increases, the demand for recreation use in the planning area is expect to continue increasing through the next 20 years.

- Wildland fire – The area burned by wildland fire would continue to vary greatly from year to year. While it is very difficult to quantify the number of acres that could be affected, the Proposed RMP would collectively cover larger areas than in past years. For the cumulative impact analysis, it has been assumed that an additional 600,000 acres could be affected.

- Drought – Over the past 6 to 7 years, most of the western U.S. has experienced drought. Parts of Nevada have been described as being in "extreme drought" by the U.S. Department of Agriculture (cited in article of Las Vegas Review-Journal, April 12, 2004). This drought is threatening crops and pastures, has raised the potential for wildland fires, and has affected BLM's ability to manage and succeed at restoration actions.

- Expansion of pinyon and juniper trees and other woody species – Over the past 150 years, trees have increased in woodlands, spread into shrublands and grasslands, and are expected to continue expansion.

- Spread of forest insects and diseases – Several years of drought in western states have resulted in severe stress on pinyon pines. This stress has made the trees less able to fend off attacks by insects such as the Ips beetle. As mentioned in Section 3.5, white pine blister rust also is infecting and causing mortality in bristlecone pines north and west of the planning area. It is expected to infect neighboring mountains in the foreseeable future.

- Spread of noxious/invasive weeds – Noxious and invasive weeds continue to spread on all lands, both public and private, reducing natural biodiversity, vegetation production, and soil quality. Due to their tolerance of fire and rapid spread into burned areas, invasive annual grasses such as cheatgrass and red brome are expected to remain a serious long-term challenge in the planning area.

- Spread of West Nile virus – In 2002 and 2003, the West Nile virus (transmitted by mosquitoes) began to cause bird, horse, and human deaths in Colorado and Utah. The virus expanded into Nevada in 2004 and is now present in White Pine and Clark counties.

4.28.2 Air Resources

Geographic Area for Analysis

The cumulative effects area for air resources includes projects and sources up to 62 miles (100 kilometers) beyond the planning area boundary.

Impacts of the Proposed RMP

The existing air quality of the planning area is typical of the largely undeveloped regions of the western U.S. For the purposes of statewide regulatory planning, this area has been designated as attainment for particulate matter with an aerodynamic diameter of 10 microns or less. (PM_{10}) and is unclassified for all other criteria air pollutants. The region is designated as a Class II area under the Prevention of Significant Deterioration regulations. The Class II designation allows for moderate growth or some degradation of air quality within certain limits above baseline air quality.

Under the Proposed RMP, emissions from wildland fires would affect the air resource. At the present time, wildland fires produce higher levels of smoke emissions than historical fires, because fuel available to be consumed by wildland fire has increased. Within the decision area, the proposed use of prescribed fire is expected to result in an increase of smoke emissions. As natural sources, wildland fires are not subject to air quality regulations, whereas prescribed fires and wildland fire use are subject to applicable smoke management regulations, including permitting. For each prescribed fire emitting more than 1.0 ton of PM_{10} and smaller, a permit application must be completed and submitted to the Nevada Division of Environmental Protection. Final approval must be obtained 24 hours prior to ignition and would be based on ambient air quality conditions. Prescribed fires are generally smaller, less intense, and shorter in duration than wildland fires, and would be expected to have fewer impacts to human health and environment in the planning area than unplanned wildland fires.

While the impact would be localized and temporary, the operation of vehicles on unpaved surfaces (including licensed vehicles, recreational off-highway vehicles, and competition off-highway vehicles) would generate PM_{10} (dust) emissions. Vehicle operation on BLM-administered lands would be restricted to designated roads and trails and permitted race courses.

Impacts of the Interrelated Projects

Present actions in the planning area that affect air resources are mainly related to mining and vegetation management/fire management practices. In the Bald Mountain and Robinson mining districts, open-pit mining generates particulate emissions and gaseous emissions from stationary and mobile sources. The Reid Gardner Station located near Moapa was permitted in 1980 and may emit 675 tons per year of oxides of nitrogen, 317 tons per year of sulfur dioxide, and 33 tons per year of PM_{10}. Particulate matter produced by land management activities or natural events on federally-administered lands originates from wildland fire, prescribed burning, road or wind-blown dust, volcanic eruptions, construction, mining, and vehicle use. Most particulate matter of concern is produced from fire, and most of this is PM_{10}.

Expected future actions in the planning area that would involve the air resource would be related to potential electric generating power projects. If constructed, the Toquop Energy Project would be a 750-megawatt coal-fired power plant located northwest of Mesquite, Nevada. The White Pine County coal-fired power plants may be constructed in the near future in Steptoe Valley between Lages Junction and McGill, Nevada. These power plants are still in the early design stages. Stringent permitting requirements exist with the Nevada Division of Environmental Protection and U.S. Environmental Protection Agency that would require modern control technology to limit the emissions and impacts from any new power plant that would affect air quality in the cumulative effects area.

Other potential mining sources include the Robinson Mine, a copper mine located west of Ely, Nevada, that has reopened and resumed open-pit mining due to the recent increase in copper prices. The Bald Mountain Mine may expand its operations depending on future gold prices. Mines can be substantial sources of particulates due to fugitive dust from disturbed areas, haul roads, and loading and unloading trucks. Particulates generated during mining activities are generally more coarse than those resulting from combustion and would deposit closer to the sources. As such, mining does not have the potential to contribute as much to cumulative impacts across a broad region, but is more likely to have local impacts.

A number of reasonably foreseeable projects could have shorter-term and smaller air quality impacts (such as fugitive dust) within the planning area including water development projects such as the one proposed by the Southern Nevada Water Authority, the Coyote Springs residential development, paving of the Kane Springs road, construction work on the road from Caliente to Mesquite, creation of a new 31-mile railroad spur to supply coal to the Toquop energy project, creation of new rights-of-way, and potentially rebuilding existing dams. Expansion or reopening of existing mines in the planning area would have similar small effects on the overall air quality within the planning area.

Protection of visibility in Class I areas threatened by reasonably foreseeable development of large stationary sources such as power plants is largely the responsibility of state regulators. Many states have adopted visibility protection plans as part of their State Implementation Plans, which dictate when and how much burning can take place. However, the State Implementation Plan for Nevada does not currently include visibility protection plans. Class I areas are subject to the most limiting restrictions regarding how much additional pollution can be added to the air. Fine particulate matter, $PM_{2.5}$, is the primary cause of visibility impairment. Emissions from wildland fires and prescribed burning, which stay suspended for many miles, are in the 0.1 to 2.5 micron size class and generally reduce visibility. Management of prescribed burns and reducing the size of wildland fires are measures that could reduce visibility impacts to sensitive areas.

Cumulative Impacts Conclusion

Cumulative impacts include those caused by sources and activities associated directly with the Proposed RMP and those caused by interrelated projects that have occurred historically, projects that are currently underway, and those that might reasonably occur in the future. Air resources in the planning area are mainly affected by mining and vegetation management/fire management practices. Regulatory decisions related to industrial development and mining would help prevent air quality degradation by applying mitigation measures on a case-by-case basis. Three potential electrical generating power projects would affect air quality in the region if constructed. Permitting requirements of the Nevada Division of Environmental Protection and the U.S. Environmental Protection Agency would require modern control technology to limit emissions and impacts from these potential sources. Fire management treatments would include in-depth planning and analysis of potential incident and cumulative air quality impacts to reduce emissions associated with fires. Projected cumulative impacts are of such a nature that the planning area should be able to meet all applicable local, state, tribal, and National Ambient Air Quality Standards under the Clean Air Act (as amended), and help prevent deterioration of air quality within the planning area from all direct and authorized actions.

Variation in Cumulative Impacts between the Proposed RMP and Other Alternatives

Alternative A: Same as the Proposed RMP.

Alternative B: Same as the Proposed RMP.

Alternative C: Same as the Proposed RMP.

Alternative D: Under Alternative D, discretionary actions, such as issuing rights-of-way for new power plants, would be greatly limited. Thus, cumulative impacts to local and regional air quality would be less than the Proposed RMP.

4.28.3 Water Resources

Geographic Area for Analysis

The cumulative effects area for water resources includes the closed to semi-closed basins of White Pine, Lincoln, and northeastern Nye counties located within the boundaries of the planning area. The mountain ranges and valleys that feed into the planning area also are part of the cumulative effects area for water resources. A portion of the lower Colorado River Basin, notably the Virgin River and Muddy River tributaries and downstream, also is included in the cumulative effects area.

Impacts of the Proposed RMP

The Proposed RMP would minimize impacts on water resources through vegetation management, management of wild horses, livestock closures, and administration of commodity-producing activities in balance with ecological system and natural resource objectives. Mineral extraction would be managed to minimize impacts to streams and water bodies, and watershed management would be designed to improve water quality in perennial and intermittent streams. Fire management would reduce the impact of wildland fires, and noxious weed management would enhance water quantity and quality. Livestock grazing, recreation, and other uses would be administered in an approach that is balanced with ecological system objectives. There may be short-term effects on water quality from additional sediment or chemical inputs stemming from vegetation treatments. These are expected to be minimal as a result of the implementation of best management practices by the Ely Field Office.

Water uses by livestock and wild horses may decrease somewhat, and intensively-used areas (such as riparian/wetland areas around springs or ponds) may recover to the extent that water quality characteristics would be expected to improve. Watershed restoration efforts would be expected to improve water quality as well.

Colorado River salinity issues are described in Section 3.3, Water Resources. Salinity is the major quality concern for the river; water resource and land managers along its entire length must consider the consequences of their activities on this issue. The BLM is fully involved in a multi-agency salinity control forum that targets salinity reduction. Efforts by the Ely Field Office to control soil erosion and minimize soil salinization through removal of tamarisk provide benefits to the overall BLM program. However, given the size of the Colorado River tributary watershed within the planning area (6,800 square miles), in comparison to the overall river basin area (250,000 square miles), any management activity or alternative would not have measurable effects on Colorado River salinity. The vast majority of salinity contributions, and potential activities for its control, occur elsewhere in the Colorado River Basin.

Impacts of the Interrelated Projects

Conflicting uses and increasing demands on water resources are common in the western and southwestern U.S. A number of projects have the potential to affect future water availability and beneficial uses in the planning area. These projects are described in general below. NEPA actions and/or state and local permitting processes pertain to these interrelated projects. In addition, the Nevada Office of the State Engineer administers surface water and groundwater rights throughout the state.

Agricultural development in the planning area consists mainly of irrigated crops in some of the major valleys of White Pine and Lincoln counties, especially those near population centers. Irrigation diversions consume surface water and water from shallow alluvial groundwater found in the valleys, as a general rule. Upstream of planning area lands, the vast majority of perennial streamflows are diverted by agriculture as they exit the mountain fronts. Agriculture in east-central Nevada consumes about 5 acre-feet of water per acre of irrigated land on an average annual basis. For crop irrigation in the planning area, this amounts to a total irrigation use of about 320,000 acre-feet of water per year. This water use for irrigation is expected to continue into the future for at least another 20 years. Due to the privately-held nature of most cropland resources and water rights, the Proposed RMP would have little or no effect on these water uses. Due to their location, extent, and/or compliance with regulatory programs, agricultural practices and industrial activities are expected to generate minimal water quality changes in the planning area overall, both during and after watershed restoration programs. Similarly, the potential for water quality changes resulting from the use of water resources by existing water rights holders in accordance with their current rights, are expected to be comparatively trivial on BLM-administered lands during and after watershed restoration.

Expected future actions in the planning area that would affect water resources involve appropriation and consumption of water for residential development, construction and operation of power plants, reopening of mines, and continued agricultural demand for water. Depending on their location, the sources and availability of water, and the amount and timing of withdrawals, these actions may impact water resource availability for other purposes in the planning area. The Coyote Springs residential development is in the early stages of planning. The estimated groundwater demand for this development is about 20,000 acre-feet per year for an indefinite period of time. The groundwater would probably come from alluvial basin aquifers.

As described in Chapter 3.0, the Southern Nevada Water Authority is considering various water supply alternatives for the Las Vegas region. The proposed project with the highest visibility in relation to the planning area involves the transfer of groundwater from Lincoln, Nye, and White Pine counties via pipeline into the Las Vegas area. Depending on the groundwater source areas and the timing and amount of groundwater withdrawal, implementing such a supply alternative could impact springs, seeps, playas, lakes, and riparian/wetland areas. Similarly, water supply proposals from Lincoln County Water District and other agencies or private groups may create water resource impacts in the planning area.

The Lincoln County Land Act sale for residential development of semi-arid land in southern Lincoln County would entail pumping about 13,500 acre-feet of water per year for an indefinite period of time from hydrologic basins in southern Lincoln County. Basins with pending water applications include Tule Desert, Clover Valley, Kane Springs Valley, and Lower Meadow Valley Wash. The water would be pumped from bedrock aquifers. The long-term impact of pumping this amount of water for an indefinite period of time is uncertain.

It is expected that there also would be some residential developments as a result of the recently passed Lincoln County and White Pine County Conservation, Recreation, and Development Acts, which are only in the early stages of planning. These additional residential developments would be expected to have a cumulative effect on groundwater resources through the demand for residential water.

The Toquop Energy Project would be a 750-megawatt coal-fired power plant located northwest of Mesquite, Nevada. Anticipated water consumption would be up to 2,500 acre-feet of water per year for the life of the power plant, which would be approximately 50 years. The water would come from the Tule Desert hydrologic basin and be obtained with bedrock groundwater wells. This groundwater would be in addition to any water taken from the Tule Desert for the Lincoln County Land Act sale residential development. No impacts to natural bedrock springs are expected from these projects, based on conclusions in the original Toquop EIS (BLM 2003e), where analysis was based on water consumption of 7,000 acre-feet per year.

The White Pine County coal-fired power plants may be constructed in the near future in Steptoe Valley between Lages Junction and the town of McGill, Nevada. These power plants are still in the early design stages, but are expected to require a maximum of 5,000 acre-feet of water per year. It is currently expected that the water would come from wells that White Pine County holds the rights on.

The Robinson Mine, a copper mine located west of Ely, Nevada, has reopened and resumed open-pit mining due to the recent increase in copper prices. The mine pits at the Robinson Mine require dewatering and approximately 5,700 acre-feet of water per year would be pumped from bedrock wells to keep the mine pits dry. The water would be consumed by the mine for processing of ore and other mine-related water needs. The projected impact to groundwater resources would not extend beyond the mining district and would not affect municipal water supplies (BLM 1994b). The Bald Mountain Mine may expand its operations depending on future gold prices. If the mine expands to accommodate additional ore bodies, the mine would require about 1,100 acre-feet of additional groundwater per year. This water would come from bedrock groundwater aquifers. Impacts to natural springs are not expected.

An additional effect may be generated by the Comins Lake project. Assuming a free-water surface evaporation rate of about 4 feet per year, a proposed expansion of Comins Lake (near Ely) by about 600 acres, would induce additional surface water losses in the planning area by 2,400 acre-feet per year. This is not expected to affect Ely Field Office management plans, nor are Ely Field Office water resources management effects anticipated to substantially affect the planned lake expansion.

Additional rights-of-way issued through the Ely Field Office would result in alteration of surface drainage patterns and could lead to accelerated erosion and sedimentation on a localized basis. Much of this would be mitigated through the use of best management practices.

Cumulative Impacts Conclusions

Cumulative impacts of the Proposed RMP would be minimized over the long term by extensive vegetation management and administration of other land uses that would consider a balanced ecological system approach. Salinity inputs to the Colorado River system would be reduced over time. Short-term increases in runoff, soil erosion, and related sedimentation may occur on those areas where vegetation treatments occur. Interrelated projects would have the potential to create impacts on both surface and groundwater resources through additional erosion and sedimentation as a result of land disturbance, further consumption of available water resources, and additional releases of undesirable water quality constituents (e.g., industrial chemicals, treated domestic effluent) into receiving waters. The net effects on water resources from the Proposed RMP and the interrelated projects may result in substantial cumulative impacts.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Alternative A: Less short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Similar short-term and long-term impacts to the Proposed RMP.

Alternative C: Greater short-term and long-term impacts than the Proposed RMP.

Alternative D: Greater short-term and long-term impacts than the Proposed RMP.

4.28.4 Soil Resources

Geographic Area for Analysis

The cumulative effects area for soil resources consists of the planning area and a small portion of the Colorado River basin, including portions of the Muddy River and Virgin River drainages.

Impacts of the Proposed RMP

Under the Proposed RMP, short-term increases in erosion and sedimentation would be expected as a result of the substantial area subject to vegetation treatments. Long-term reduction in erosion and sedimentation is anticipated as perennial understory cover and near-surface root biomass increase over the current condition in these areas. Additional soil resources would be exposed to herbicide treatments, but implementation of best management practices would minimize impacts. Soil salinization and resulting salinity inputs to drainages would decrease as a result of tamarisk control. Impacts on soils from producing commodities such as livestock, recreation, wild horses, and minerals would remain similar to or decrease from those of the current conditions and management approaches.

Impacts of Interrelated Projects

Impacts of interrelated projects would include those potentially resulting from the construction of power plants and residential developments, re-opening or expansion of mining activities in the planning area such as the Robinson Mine or the Bald Mountain Mine, and the creation of additional rights-of-way. Soil resource impacts from these projects would include the excavation, removal, and possible replacement of soil materials, which would generally result in a loss of productivity. Additional impacts may include compaction and increased erosion hazard, as well as areas of contaminated soil from inadvertent chemical spills. Such impacts would be minimized to the extent possible by applicable regulatory programs and corresponding implementation of erosion controls, spill prevention and countermeasures, stormwater pollution prevention plans, and reclamation/site restoration activities.

If extensive groundwater withdrawals are made by the Southern Nevada Water Authority, further impacts may occur to soil moisture regimes in riparian/wetland areas. If water tables are lowered as a result of groundwater withdrawals, then it may be possible for riparian/wetland areas to become drier. The potential degree and extent of such effects is unknown.

Cumulative Impacts Conclusion

Cumulative impacts of the Proposed RMP and interrelated projects would involve a short-term increase of erosion and sedimentation, with accompanying reduction in soil quality, when the activities are initially undertaken. Extensive vegetation treatment in the planning area would, in time, result in substantial reduction of erosion and sedimentation. Similarly, soil quality would increase over the long term as a result of vegetation treatments. Impacts from interrelated project development within the planning area would result in permanent removal or alteration of soil resources in specific areas (such as project footprints or some riparian/wetland areas). Regulatory programs (including permit approval and monitoring processes), and the implementation of best management practices and mitigation measures, would reduce the degree of overall erosion and sedimentation impacts. Soil quality would be lost in the comparatively smaller areas affected by interrelated projects, but would improve over widespread areas with successful vegetation restoration.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Alternative A: Less short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Cumulative impacts would be similar to the Proposed RMP.

Alternative C: Cumulative impacts would be greater than the Proposed RMP.

Alternative D: Cumulative impacts would be greater than the Proposed RMP, particularly over the long term.

4.28.5 Vegetation Resources

Geographic Area for Analysis

The geographic area for cumulative impacts to vegetation is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Direct effects of the Proposed RMP on vegetation would be achieving the desired range of conditions expressed in vegetation states for each vegetation community, including treatment over the next several decades of approximately 7.1 million acres that do not currently meet the criteria for being in healthy conditions. Treatment of these sites is necessary to reestablish the desired vegetation composition and restore resiliency. Impacts including increased erosion and spread of invasive species could occur in the event that a treatment is unsuccessful in achieving prompt revegetation. Numerous other aspects of the Proposed RMP would indirectly affect vegetation in an offsetting manner through changes in management of wild horses, travel management and off-highway vehicle use, forest/woodland and other plant products, fire, and special designations. Various additional indirect effects would occur through management changes related to lands and realty, renewable energy, recreation, and geology and mineral extraction.

Impacts of the Interrelated Projects

The primary past actions that have affected vegetation are historic mining activities and other human-caused surface disturbances, wildland fires and fire suppression, and historic grazing practices. Surface disturbances have affected only a small percentage of the total area within the planning area. Past grazing practices (including use by livestock and wild horses) and fire suppression, however, have been major contributors to current deteriorated vegetation conditions throughout the planning area. Partially due to these conditions, the spread of invasive and noxious weeds now threatens most of the ecological systems in the planning area, accentuating the need for prompt and effective restoration treatment.

Present actions affecting vegetation composition and ecological health include livestock and wildlife management, wild horse management, wildland fires, and watershed management. Vegetation also is affected by factors largely outside Ely Field Office's management, such as drought conditions, insects, occurrence of wildland fires, and introduction of invasive species in conjunction with disturbances on nearby private lands.

Key future actions anticipated to affect vegetation include potential restrictions associated with any additional species listings under the Endangered Species Act (a reduced or remote probability under the Proposed RMP), and the same natural processes mentioned above such as fire, insects, and drought. As indicated in **Table 4.28-1**, numerous reasonably foreseeable development projects would contribute to additional surface disturbances and loss of existing vegetation in those areas. These range in size from a few acres to over 100,000 acres of potential loss. These actions have the potential to contribute to further ecological deterioration with increased spread of invasive species.

Cumulative Impacts Conclusion

The actions related to the Proposed RMP would enhance vegetation resiliency on a long-term basis, although some elements of the alternative would contribute to temporary loss of vegetation and potential spread of invasive species. Most of the interrelated projects have produced or would result in the removal of native vegetation and potential spread of invasive species, either through physical disturbance or alteration of vegetation communities. The enhanced vegetation resiliency resulting from the Proposed RMP should offset a large portion of the past and potential future disturbance effects from interrelated projects.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factors involved are those that affect the spread of invasive species, contribute to loss of native vegetation diversity and vigor, or constrain the selection of treatments and resultant success for restoration of deteriorated sites. The primary long-term factors include actions that would impact the maintenance of resiliency on restored areas, such as grazing by livestock, wildlife, and wild horses.

Alternative A: Greater short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Same short-term, same long-term impacts as the Proposed RMP.

Alternative C: Same short-term, greater long-term impacts than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts than the Proposed RMP.

4.28.6 Fish and Wildlife

Aquatic

Geographic Area for Analysis

The geographic area for the cumulative impact analysis for fisheries includes perennial drainages within the planning area that support fish species. The study area also includes downstream extensions of perennial drainages into areas outside the planning area (i.e., Virgin River).

Impacts of the Proposed RMP

Under the Proposed RMP, the Ely Field Office would work with the Nevada Department of Wildlife to manage aquatic and riparian habitat for the purpose of maintaining and enhancing existing fisheries. Other programs such as vegetation treatment, wildlife management, wild horses, lands and realty, travel management, recreation, livestock grazing, woodland product harvests, geology and mineral extraction, fire management, and noxious weeds could cause sedimentation and habitat alteration due to surface disturbance. The Proposed RMP would not result in additional water use or affect fish habitat in terms of stream flows or water levels in reservoirs.

Impacts of the Interrelated Projects

A continuation of current and future activities involving road development, water development, livestock grazing, agricultural development, off-highway vehicle use, and land development would contribute to effects on fish habitat. Natural processes such as wildland fires and drought also would affect habitat by contributing to sedimentation, loss of riparian vegetation, and reduction in available wetted area. Impacts from water use could potentially alter flows in streams and affect the quantity of habitat. Surface disturbance activities could contribute to increased sedimentation in the drainages. Activities on public lands would implement erosion control measures to reduce sediment input to water bodies. Agricultural activities also could contribute fertilizers and pesticides in runoff or irrigation return flows.

Surface disturbance activities involving grazing, new rights-of-way, and recreation use on land surrounding Comins Lake would result in localized sediment effects on fish habitat. The Bassett Lake and Comins Lake expansion projects would enhance fish habitat by increasing wetted area in the reservoirs. Short-term and temporary sedimentation would occur in the construction area in or adjacent to the reservoirs. However, erosion-control would be required to minimize sediment input to the lakes.

During consultation, the U.S. Fish and Wildlife Service and the Ely Field Office determined that none of the proposed management actions in the RMP were likely to result in a “may affect” determination for any of the special status species unique to the Virgin River environment, including the Yuma clapper rail, woundfin, Virgin River chub, and Moapa dace. Similarly, these species would not be affected by cumulative effects related to the RMP management actions. Thus, these species are not addressed in the Biological Assessment associated with the RMP and are not addressed in this cumulative effects analysis.

Cumulative Impacts Conclusion

The cumulative effects of interrelated projects in combination with program-specific management under the Proposed RMP would generally improve maintenance and quality of fish habitat in the long term as restoration efforts improve both upland and riparian habitat conditions. This habitat improvement would tend to offset continued habitat losses and damage resulting from various interrelated projects including potential groundwater withdrawal.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Alternative A: In comparison to the Proposed RMP, Alternative A would be expected to result in slightly less impacts on a short-term basis and greater impacts on a long-term basis. This prediction is based on the differences in treated areas under the Proposed RMP and Alternative A.

Alternative B: Same as the Proposed RMP.

Alternative C: Same as the Proposed RMP, on a short-term basis. On a long-term basis, sediment input could be greater due to widespread fires.

Alternative D: Cumulative effects of interrelated projects in combination with Alternative D would be less than the Proposed RMP in terms of surface disturbance as a result of less vegetation treatments. Under Alternative D, sediment input could be greater on a long-term basis mainly due to widespread fires.

Wildlife

Geographic Area for Analysis

The geographic area for cumulative impacts to wildlife is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

There would be a loss of wildlife habitat on less than 5 percent of the planning area. Direct loss of habitat would occur as a result of land disposals and construction activities associated with energy production and mineral development. Indirect losses would occur through fragmentation of habitat and avoidance of areas adjacent to project sites during construction and operation activities.

The quality of wildlife habitat on the remaining 95 percent of the planning area would improve as a result of wildlife habitat management, wild horse management, livestock grazing management, off-highway vehicle management, vegetation management, watershed management, fire management, and noxious and invasive weed management. The quality of wildlife habitat would be enhanced through increased forage, improved perennial vegetation cover and composition, and better community structure. On a watershed and landscape level, restoration actions would create a mosaic of different vegetation phases and states that would provide habitat for a greater diversity of wildlife species.

A reduction in wild horse herd management areas and overall populations would improve wildlife habitats by increasing herbaceous forage and water availability in the short term, followed by an increase in overall habitat quality in the long term, particularly within the southern portion of the planning area.

Impacts of the Interrelated Projects

Cumulative effects to wildlife resources from past, present, and reasonably foreseeable interrelated projects and management actions that result in surface disturbance activities would be directly related to habitat loss or alteration, and habitat fragmentation. Habitat loss or alteration would result in direct losses of smaller, less mobile species (e.g., small mammals and reptiles), and the displacement of more mobile species into adjacent habitats that may currently be at or near carrying capacity, thus increasing the probability of higher mortality rates in the surrounding areas.

Ongoing and future interrelated actions would continue to impact wildlife habitat and species within the planning area. Although restoration of vegetation communities would be managed to promote ecological system health on a watershed management basis, reductions in habitat availability and quality would continue in areas that occur outside of Ely Field Office jurisdiction. Natural processes such as fire and drought would continue to result in localized habitat reductions and the spread of noxious and invasive weed species. Several of the reasonably foreseeable future actions could contribute to additional surface disturbances, loss of habitat, habitat fragmentation, and creation of migration barriers.

Cumulative Impacts Conclusion

The actions related to the Proposed RMP would improve wildlife habitat conditions on the watershed level and landscape level in the short and long term. However, the interrelated projects either have produced or would result in direct wildlife mortality, displacement of wildlife, habitat loss or alteration, and increased habitat fragmentation. The habitat improvement resulting from the vegetation restoration treatments should offset a large portion of the past and potential future habitat losses and damage resulting from interrelated projects.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factors involved are those that affect the spread of invasive vegetation species and the expansion of pinyon and juniper trees, contribute to the loss or reduction of native vegetation cover and structure, or constrain the selection of treatments and resultant success for restoration of deteriorated habitats. The primary long-term factors include actions that would impact or benefit wildlife by reducing habitat degradation and fragmentation and promoting ecological health and resiliency.

Alternative A: Greater short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Same short-term, fewer long-term impacts than the Proposed RMP.

Alternative C: Greater short-term, greater long-term impacts than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts than the Proposed RMP.

4.28.7 Special Status Species

Special Status Plant Species

Geographic Area for Analysis

The geographic area for cumulative impacts to special status plants is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Vegetation management programs would include surveying and monitoring federal lands for Ute ladies'-tresses orchid, based on the availability and assistance of the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service would identify potential habitat areas for the species. Conservation and recovery actions would be implemented for any populations observed within the planning area. Monitoring and inventorying measures would be developed and implemented for other special status plant species.

The Highland Range, Schlesser Pincushion, and White River Valley ACECs will be designated for the protection of known populations of special status plant species. The establishment of these ACECs and the land use restrictions associated with them would improve the protection of known and potential habitat for special status plants in these areas. These and several other ACECs would be closed to locatable and mineral material development and would have no surface occupancy restrictions for leasable minerals. A detailed analysis of potential impacts to special status plants would be completed during watershed and habitat assessments. As part of the best management practices, potential mitigation measures and monitoring would be developed on a site-specific basis. Therefore, implementation of the Proposed RMP would enhance the conservation of special status plants.

Impacts of the Interrelated Projects

Cumulative impacts to special status plants from past, present, and reasonably foreseeable future actions include the loss of habitat and plants and degradation of habitat as a result of surface disturbances associated with natural processes (e.g., wildland fire) or human activities (e.g., mine development, road and railroad construction, and agricultural and livestock uses). Best management practices, mitigation measures, and monitoring have been implemented for some of the past actions and would be implemented for present and reasonably foreseeable future actions to minimize impacts to special status plants. Therefore, impacts to special status plants as a result of interrelated projects would be minimal.

Cumulative Impacts Conclusion

The impacts related to the Proposed RMP would have minimal effect on the Ute ladies'-tresses orchid and other special status plants on an overall basis, while at the same time protection of these species would be enhanced in several ACECs. Most of the interrelated projects have produced or would produce minimal effects to special status plants, either through physical disturbance or alteration of vegetation communities.

The improved knowledge base and potential mitigation measures related to the Proposed RMP should offset a large portion of the past and potential future adverse effects from interrelated projects.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Alternative A: Greater potential for impact than the Proposed RMP because inventories and monitoring would not be completed for the Ute ladies'-tresses orchid, and ACECs would not be designated for this or other special status plant species.

Alternative B: Greater potential for impact than the Proposed RMP because ACECs would not be designated for special status plant species.

Alternative C: Greater potential for impact than the Proposed RMP because inventories and monitoring would not be completed for the Ute ladies'-tresses orchid and ACECs would not be designated for special status plant species.

Alternative D: Greater protection than the Proposed RMP relative to physical disturbances from other uses, but greater risk than the Proposed RMP from major wildland fire events and spread of weeds. Overall, impacts would be comparable to the Proposed RMP.

Special Status Aquatic Species

Geographic Area for Analysis

The geographic area for the cumulative impact analysis for special status aquatic species includes perennial drainages and springs within the planning area that provide occupied and designated critical habitat for sensitive aquatic species. The analysis area also includes perennial streams and springs on private, state, or tribal lands that are connected to drainages within the planning area and located immediately downgradient from the planning area boundary (e.g., Virgin River and springs that provide occupied and designated critical habitat for special status species).

Impacts of the Proposed RMP

Under the Proposed RMP, special status fish species would be managed through evaluations of their overall specific habitat conditions and factors affecting their populations planning area-wide and through habitat restoration and multiple use restrictions at the watershed level. Maintenance would occur where suitable habitat and populations exist, and mitigation would continue to be implemented where multiple-use impacts occur.

Habitat for the Pahrump poolfish (Shoshone Pond) would be improved under the Proposed RMP by building a new fence to exclude both human and livestock access. The fenced area also would be expanded in size to exclude new surface disturbance and minimize sedimentation and runoff from upland areas. The fenced area would be reseeded to minimize sedimentation input to the ponds.

Three of the ACECs designated in the Proposed RMP are designed to enhance protection and habitat for special status aquatic species. These include: Condor Canyon ACEC – 4,500 acres (Big Spring spinedace); Lower Meadow Valley Wash ACEC – 25,000 acres (Meadow Valley Wash desert sucker and Meadow Valley Wash speckled dace); and Shoshone Ponds ACEC – 1,240 acres (Pahrump poolfish). Additionally, establishment of the Goshute Canyon Natural Area – 7,600 acres would benefit habitat for the Bonneville cutthroat trout.

Impacts of the Interrelated Projects

The following information summarizes cumulative actions in relation to individual species based on geographical areas within the planning area.

- Big Spring Spinedace, Meadow Valley Wash Desert Sucker, and Meadow Valley Wash Speckled Dace: Cumulative actions in the area include the Pioche Mining District, expansion of the Panaca pozzolana mine, grazing, wildland fire, drought, and recreation use. Land development in the general area could use groundwater that may affect surface flows in Meadow Valley Wash. The Condor Canyon Habitat Management Plan was implemented in 1990 to protect the species. However, the management actions ceased after a wildland fire burned the canyon in 1999. The Lower Meadow Valley Multispecies Habitat Conservation Plan (in preparation) is designed to protect habitat for these species in the lower Meadow Valley Wash.

- Pahrump Poolfish: Cumulative actions for the Shoshone Ponds Area include wildland fire, drought, and recreation. Maintenance of adequate water levels, which provide the necessary wetted area and associated habitat parameters, is an important factor for the species.

- White River Springfish: Cumulative actions in the Ash Springs area include agricultural water use and grazing on adjacent private lands. Diseases also provide threats to the species. Maintenance of adequate water levels is an important factor for the species.

- Hiko White River Springfish, Pahranagat Roundtail Chub, and White River Spinedace: These fish species occur on private land in the White River Valley. Cumulative actions for these species include agricultural water use and surface disturbance, grazing, wildland fire, and drought conditions. Maintenance of adequate water levels, which provide the necessary wetted area and associated habitat parameters, is an important factor for the species.

- Railroad Valley Springfish: This fish species occurs on the Duckwater Indian Reservation. Cumulative actions in the area include agricultural water use and surface disturbance, grazing, wildland fire, and drought conditions. The Railroad Valley Habitat Management Plan was implemented to protect spring habitat for this species (U.S. Fish and Wildlife Service 1996).

Maintenance of adequate water resources in springs and streams is a primary key to protecting habitat for various special status aquatic species. Such resources may be potentially affected by various interrelated projects that utilize groundwater and surface water resources. Thus, additional residential/commercial land development projects and water development projects could affect these species, depending on the specific quantities and locations of water supplies involved. Since the water supplies for the individual interrelated projects have not been identified at this time, it is impossible to analyze the effects on individual special status species. Additional NEPA analyses will be conducted as individual development projects are identified and evaluated for approval.

Cumulative Impacts Conclusion

Surface disturbance activities could result in localized water quality changes due to sedimentation or runoff contaminants, and habitat alteration or loss. Several programs such as vegetation restoration and weed management (i.e., tamarisk removal) could increase stream flows and spring discharges. Several of the interrelated projects could result in changes to surface water quantity in various streams or springs (e.g., groundwater withdrawal). In the long term, vegetation restoration could reduce stream flows originating from surface runoff, but could locally increase stream base flows and spring discharges. Other interrelated actions could combine with these water quantity changes to affect habitat for sensitive species. The cumulative effects of interrelated projects in combination with program-specific management under the Proposed RMP would result in impacts on sensitive fish species habitat due to surface disturbance in watersheds, but this would be balanced by an increased rate of maintenance and restoration of habitat for sensitive fish species.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Alternative A: Cumulative effects would be greater than for the Proposed RMP.

Alternative B: Same as the Proposed RMP.

Alternative C: Same as the Proposed RMP.

Alternative D: Same as the Proposed RMP.

Special Status Wildlife Species

Geographic Area for Analysis

The geographic area for cumulative impacts to special status wildlife is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Impacts would include the reduction of canopy cover of woody species that do not meet the desired range of conditions as stated in Chapter 2.0 (e.g., woodlands, forests lands, and shrubs) and the temporary loss of forage and cover in the areas being treated until the desirable perennial species become reestablished. It is anticipated that treated areas would result in increased herbaceous forage and ground cover for special status species in the short term (less than 5 years), followed by the establishment of shrub vegetation in the long term (greater than 50 years) that meet the desired range of conditions for vegetation communities as described in Chapter 2.0, Vegetation. On a watershed level, restoration activities would result in higher quality forage, increased cover and vegetation structure, and increased habitat quality for special status species. On a landscape level, restoration activities to achieve desired ranges of vegetation conditions would improve special status species habitats by reducing habitat degradation and fragmentation, and promoting ecological health and resiliency.

A reduction in wild horse herd management areas and overall populations would improve special status species habitats by increasing herbaceous forage and water availability in the short term, followed by an increase in overall habitat quality in the long term, particularly within the southern portion of the planning area.

Increased management emphasis on habitat protection and improvement for special status wildlife species (e.g., greater sage-grouse) would impose a variety of constraints on other management programs and resource uses.

Impacts of the Interrelated Projects

The following information summarizes cumulative actions in relation to individual species based on geographical areas within the planning area.

- Desert tortoise: Construction activities and traffic related to railroad development, road maintenance, and road construction associated with interrelated projects within desert tortoise habitat could contribute direct impacts to desert tortoise including habitat degradation and direct mortality from collisions with vehicles. Some of the interrelated projects (e.g., land disposals and rights-of-way) also may contribute to indirect effects on desert tortoise (e.g., increased predation opportunities for ravens perching on transmission lines).

- Southwestern willow flycatcher and yellow-billed cuckoo: Construction activities and traffic related to railroad development and maintenance, highway construction and maintenance, and construction within utility corridors associated with interrelated projects within habitat for these species could create impacts in terms of noise and habitat degradation.

Greater sage-grouse: Construction and operation of facilities associated with energy production (i.e., power plants, wind turbines, substations, and transmission lines) could impact greater sage-grouse populations by reducing breeding and nesting habitat and increasing potential predation opportunities for raptor species.

Ongoing and future interrelated actions would continue to impact wildlife habitat and species within the planning area. Although restoration of vegetation communities would be managed to promote ecological system health on a watershed management basis, reductions in habitat availability and quality would continue in areas that occur outside of Ely Field Office jurisdiction. Natural processes such as fire and drought would continue to result in localized habitat reductions and the spread of noxious and invasive weed species.

Cumulative Impacts Conclusion

The impacts related to the Proposed RMP would improve special status species habitat conditions on the watershed and landscape level in the long term. However, the interrelated projects either have produced or would continue to result in direct mortality, displacement of individuals, habitat loss or alteration, habitat fragmentation, and possible population reductions of some special status species. The special status species habitat improvement resulting from the Proposed RMP should offset a large portion of the past and potential future habitat losses and damage resulting from interrelated projects. However, local greater sage-grouse populations may be reduced in numbers because of development in and around breeding habitat (i.e., leks) regardless of the habitat improvement that may occur elsewhere.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factors involved are those that increase the spread of invasive vegetation species and the expansion of pinyon and juniper trees, contribute to the loss or reduction of native vegetation cover and structure, or constrain the selection of treatments and resultant success for restoration of deteriorated habitats. The primary long-term factors include actions that would impact or benefit special status species by reducing habitat degradation and fragmentation, promoting ecological health and resiliency, and increasing overall biological diversity.

Alternative A: Greater short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Same as the Proposed RMP.

Alternative C: Greater short-term, greater long-term impacts than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts than the Proposed RMP.

4.28.8 Wild Horses

Geographic Area for Analysis

The cumulative effects area for wild horses is the array of existing herd management areas, a buffer around these herd management areas that horses occasionally use when they cross the boundaries, and a few herd management areas that abut the planning area boundary with the associated horse herds commonly crossing to adjoining areas outside the planning area.

Impacts of the Proposed RMP

Direct effects of the Proposed RMP on wild horses involve the reduction in herd management areas from 24 to 6 with accompanying reductions in total acreage of herd management areas from 5.4 million to 3.7 million acres and in the appropriate management level from a range of 1,986 to 2,141 to a range of 810 to 1,695. This would be a long-term change that would reduce population numbers but improve habitat conditions, health of individual animals, and long-term herd viability. Indirect effects of the alternative include the effects of proposed vegetation restoration treatments that would generally improve wild horse habitat; changes in management of recreation and off-highway vehicle use that would reduce conflicts of such uses with wild horse herds in some herd management areas while increasing conflicts in others; and allocation of a portion of the increased forage production on vegetation treatment areas within herd management areas to wild horses.

Potential impacts of wild horse management on other resources and management programs include potential conflicts with or constraints imposed on other users of the lands within herd management areas. Resource conflicts may include vegetation, wildlife and fisheries, special status species, visual resources, recreation, and cultural resources. Constraints in relation to other users could affect lands and realty, livestock grazing, renewable energy, travel management, mineral development, and fire management. The reduction in number of herd management areas in the decision area would reduce the occurrences of these conflicts.

Impacts of the Interrelated Projects

The primary past actions that have affected wild horse populations and their habitat are livestock grazing, as it affects vegetation resources of the planning area, and the Wild Free-Roaming Horse and Burro Act, as it affects the process of controlling wild horse populations. Numerous other human-caused surface disturbances, wildland fires, and human activities have contributed to current habitat conditions, but generally to a lesser degree than historic grazing practices. Past grazing practices by both wild horses and livestock have been major contributors to current vegetation conditions throughout the planning area. Partially due to these conditions, the spread of invasive and noxious weeds now threatens most of the ecological systems in the planning area.

Present actions affecting wild horses are mainly those that affect the available habitat, including the supply of both forage and water within the herd management areas. Key examples include drought conditions, wildland fires, and competition with livestock and, to a lesser degree, wildlife.

Key future actions anticipated to affect wild horses include potential restrictions associated with any additional species listings under the Endangered Species Act (a reduced or remote probability under the Proposed RMP) and the same natural processes mentioned above including fire, drought, and climate change. Each of these has the potential to either reduce areas available for grazing or the level of forage production on the available area. It seems probable that the West Nile virus would begin affecting wild horses within the planning area in the next few years. It is not known how the virus would affect horses in the wild, or whether wild herds would be more or less vulnerable to this mosquito-borne disease than domestic horses. Small herds appear to be more vulnerable than larger herds. Several of the reasonably foreseeable future actions could contribute to additional surface disturbances, loss of vegetation or habitat, and creation of migration barriers in one or more of the herd management areas.

Cumulative Impacts Conclusion

The impacts related to the Proposed RMP generally would improve habitat for wild horse herds on a long-term basis, while many of the potential impacts associated with interrelated projects would reduce habitat, but typically to a lesser degree. Thus, the overall cumulative effects would be general improvement in the habitat necessary for long-term herd health and viability.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factor involved is the acreage of current herd management areas that would be temporarily affected by watershed treatment, fire rehabilitation, or increased competition with other users. The primary long-term factor is the potential for permanent or long-range losses or habitat restrictions associated with potential additional species listed under the Endangered Species Act. Overall summary assessments of these combined factors follow below by alternative.

Alternative A: Less short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Same short-term, greater long-term impacts than the Proposed RMP.

Alternative C: Same short-term, greater long-term impacts than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts than the Proposed RMP.

4.28.9 Cultural Resources

Geographic Area for Analysis

The geographic area for cumulative impacts to cultural resources is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Cultural properties within the planning area would continue to deteriorate through natural agents, unauthorized public use, and vandalism. Direct impacts associated with land management actions would be reduced or eliminated in compliance with federal and state cultural resource mandates and existing best management practices, and implementation of use allocations. Under the Proposed RMP, an overall decrease in the number of acres open to livestock/wild horse grazing and off-highway vehicle use and restricting recreational events to specified areas would decrease the use intensity within the planning area, thereby preserving the regional database for cultural resources. The designation of eight ACECs for the protection and preservation of cultural sites within the planning area also may result in an increase in the regional database depending on additional inventories of these sites.

Impacts of the Interrelated Projects

Cumulative impacts to cultural resources could occur through incremental degradation of the resource base from a variety of sources, which reduce the information and interpretive potential of cultural properties. Other regional resource, land use, and economic development planning efforts could affect the types and intensity of uses on private, state, or other federal lands within the planning area and could, therefore, potentially affect the regional cultural resource database. Development of lands that are not protected by federal or state cultural resource statutes and regulatory protections could decrease the regional resource base and potentially limit management options within the planning area.

Surface disturbance activities associated with power plants, mining, land disposal, renewable energy, road development, transmission lines, and fire management have been subject to NEPA review prior to project activities in adherence to federal and state laws. As directed by law, cultural resources eligible to the National Register of Historic Places have been avoided, or if this was not possible, recovered for their scientific value. Data recovery of important cultural resources has expanded the regional database and knowledge of prehistoric and historic contexts. Future actions involving surface disturbing activities as presented in **Table 4.28-1** would require a similar set of procedures. Impacts associated with off-highway vehicle use and livestock grazing have contributed to the degradation of site settings and incidental damage to cultural resources. These impacts would be mitigated on a case-by-case basis as discovered. Natural-caused disturbances, such as wildland fires, damage or completely destroy cultural resources, in particular historic structures and rock art.

Cumulative Impacts Conclusion

There would be a high level of protection of cultural resources under the Proposed RMP (overall decrease in lands available to off-highway vehicle use and livestock/wild horse grazing and the designation of ACECs to protect cultural resources) offsetting the expected increase in visitor and recreation use in the planning area. Thus, the overall cumulative effects would be minimal.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Analysis of cumulative effects focuses primarily on direct and indirect impacts associated with the various alternatives. An overall summary assessment of direct and indirect impacts follows below by alternative.

Alternative A: Greater direct and indirect impacts than the Proposed RMP.

Alternative B: Similar direct and indirect impacts as the Proposed RMP.

Alternative C: Greater direct and indirect impacts than the Proposed RMP.

Alternative D: Less direct and indirect impacts than the Proposed RMP.

4.28.10 Paleontology

Geographic Area for Analysis

The geographic area for cumulative impacts to paleontological resources is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Impacts associated with land management actions in the Proposed RMP would be minimized or reduced in accordance with federal legislation and existing best management practices, and through implementation of use allocations. Under the Proposed RMP, an overall decrease in the number of acres open to off-highway vehicle use and restricting recreational events to specified areas would decrease the use intensity within the planning area; thereby preserving the regional database for paleontological resources. However, impacts to paleontological resources could continue to occur through incremental degradation of the resource base from a variety of sources, which reduce the information and scientific research potential of fossil material. Geological formations with exposures containing vertebrate and invertebrate fossils would continue to be impacted by weathering and other natural agents.

Impacts of the Interrelated Projects

The primary factors that have affected and continue to affect paleontological resources are planned and dispersed off-highway vehicle use, recreation, land disposals, creation of rights-of-way, and mining activities that involve surface disturbing activities as presented in **Table 4.28-1**. The direct effects of planned off-highway vehicle use, developed recreation, lands and realty actions, and mining have been mitigated in compliance with federal legislation and existing best management practices. Impacts associated with dispersed off-highway use and recreation (e.g., trilobite collecting) have increased as visitor and recreational use has increased. Off-highway vehicle use and recreation have been the major contributors to illegal collecting of fossils and soil erosion that exposes subsurface fossil material.

Cumulative Impacts Conclusion

There would be a high level of protection of paleontological resources under the Proposed RMP (overall decrease in lands available to off-highway vehicle use and mineral development) offsetting the expected increase in visitor and recreation use in the planning area. Thus, the overall cumulative effects would be minimal.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Paleontological resources are nonrenewable, therefore, analysis of cumulative effects focuses primarily on direct and indirect impacts associated with the various interrelated projects. An overall summary assessment of direct and indirect impacts follows below by alternative.

Alternative A: Greater direct and indirect impacts than the Proposed RMP.

Alternative B: Similar direct and indirect impacts as the Proposed RMP.

Alternative C: Greater direct and indirect impacts than the Proposed RMP.

Alternative D: Less direct and indirect impacts than the Proposed RMP.

4.28.11 Visual Resources

Geographic Area for Analysis

The geographic area for cumulative impact analysis of visual resources lies entirely within the planning area boundary.

Impacts of the Proposed RMP

The primary factor involved for long term impacts is the visual resource management classification system established for the decision area. Effort would be made to design activities to meet the visual resource management classification, and mitigation would be considered to lessen visual impacts. Vegetation treatments could create visual disturbances in the short term that would lessen over the long term. Co-location of utility rights-of-way and communication sites would serve to lessen long-term impacts.

Increased emphasis on visual resource management within the decision area would affect a variety of other resource uses through more emphasis on additional mitigation measures to protect visual resource quality. This may affect actions related to vegetation treatments, lands and realty, renewable energy, forest/woodland products, geology and mineral extraction, and fire management.

Impacts of the Interrelated Projects

Potential impacts to visual resources could occur from mining activities in the Robinson and Bald Mountain mining districts; energy projects such as the transmission lines in the Southwest Intertie Project corridor, the Toquop energy project, the White Pine County power plant projects, and wind energy development; and the development of the Department of Energy and Toquop rail lines.

Cumulative Impacts Conclusion

Cumulative impacts to visual resource use would occur through the degradation of visual resources resulting from a number of activities within the planning area. Under the Proposed RMP, impacts to visual resources would be minimal, those impacts mainly being from surface disturbances associated with the vegetation treatments, and the reduction in surface disturbances associated with the elimination of cross-country off-highway vehicle use and the co-location of utility rights-of-way and communication sites. Some interrelated projects would result in surface disturbances, increased air emissions, and local visual impacts. An increase in the area designated as Class II and III and a decrease in the area designated as Class IV would lead to more emphasis on mitigation for visual impacts from proposed actions across the planning area. The designation of the Pony Express Visual Resource Management Class II corridor places the scenic values of this area at a higher level. Interrelated projects would not occur within Class I areas.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Cumulative impacts would differ due to differences in management direction for off-highway vehicle use, approval of utility rights-of-way and communication sites, and vegetation treatments and fire management.

Alternative A: Greater impacts than the Proposed RMP due to maintaining approximately 9.8 million acres of off-highway vehicle open areas.

Alternative B: Slightly less impacts than the Proposed RMP.

Alternative C: Greater impacts than the Proposed RMP due to wider and additional designated utility corridors.

Alternative D: Greater impacts than the Proposed RMP due to non-suppression of wildland fires.

4.28.12 Lands and Realty

Geographic Area for Analysis

The geographic area for cumulative impacts to lands and realty is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

The cumulative impacts to the management of lands and realty would occur through the changes in ownership and management of land resources, the availability of lands for disposal, and changes in access to land resources. Under the Proposed RMP, there would be more acreage excluded from disposal and more right-of-way exclusion and avoidance areas resulting from the designation of new ACECs. This amount would be very minor in comparison with the size of the planning area. Co-location of utility rights-of-way and communication sites would be encouraged.

Impacts of the lands and realty program on other resources and uses would be widespread involving potential loss of resources, new surface disturbances, habitat losses and fragmentation, degradation of visual resource quality, additional constraints on fire management, and increased potential for introduction and establishment of invasive species.

Impacts of the Interrelated Projects

Impacts from interrelated projects to lands and realty could come from the Lincoln County Conservation, Recreation, and Development Act; the White Pine County Conservation, Recreation, and Development Act; the transfer of lands to American Indian Tribes (the area and location of which are to be determined by Congress); the Barrick Gold Corporation Land Sale; water development in White Pine and Lincoln counties; residential developments; road development; energy development; mining activities; and the development of the Department of Energy and Toquop rail lines. Interrelated projects could reduce the amount of developable land within the planning area and create pressure for development in additional areas. They also would contribute to many of the same impacts noted above as being generated by the lands and realty program and affecting other resources.

Cumulative Impacts Conclusion

Cumulative impacts to the management of lands and realty would occur as a result of new avoidance and exclusion areas and management direction encouraging co-location of utility rights-of-way and communication sites. Interrelated projects could increase pressure for development and create a higher demand for developable lands in the planning area. Cumulative impacts of the lands and realty program and interrelated actions on other resources and uses would be largely a function of the collective disturbance areas involved as shown in **Table 4.28-1**.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

The primary factors involved for impacts associated with lands and realty are the amount of lands available for disposal and the designation of utility corridor widths and communication sites.

Alternative A: Less impact than the Proposed RMP.

Alternative B: Similar impacts to the Proposed RMP.

Alternative C: Greater impacts than the Proposed RMP, due to wider utility corridors.

Alternative D: Greater impacts than the Proposed RMP, due to restriction on new land use authorizations and land disposals.

4.28.13 Renewable Energy

Geographic Area for Analysis

The geographic area for cumulative impacts to renewable energy is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Areas with potential for wind and solar energy development exceed the foreseeable demand. Development proposals would be handled on a case-by-case basis subject to NEPA analysis, and not restricted to the areas identified as having high potential for wind and solar development. Development of renewable energy facilities would affect numerous other resources and uses within the planning area through potential loss of resources, new surface disturbances, habitat losses and fragmentation, degradation of visual resource quality, interference with wild horse gathers, additional constraints on fire management, and increased potential for introduction and establishment of invasive species.

Impacts of the Interrelated Projects

Impacts from interrelated projects to renewable energy could come from power plant and transmission line development, as well as water development. Interrelated power and transmission projects could make renewable energy development more economically viable by potentially increasing access to transmission lines, and building more transmission capacity. Power plants, water development, and residential development could have impacts in terms of reducing the amount of water available for solar energy development. These interrelated projects also would contribute to many of the same impacts noted above as being generated by the renewable energy program and affecting other resources.

Cumulative Impacts Conclusion

Interrelated power plant and transmission line projects could create better access to electrical transmission lines. Interrelated power plants, water development, and residential development projects could impact renewable energy development through the use of water that could otherwise be used for development of concentrated solar power. Cumulative impacts of the renewable energy program and interrelated projects on other resources and uses would be largely a function of the collective disturbance areas involved as shown in **Table 4.28-1**.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

The primary factors involved for impacts associated with renewable energy are the amount of land available for renewable energy and the resources to develop renewable energy projects. Because renewable energy development proposals would be handled on a case-by-case basis throughout the entire planning area under each alternative, there is little difference in impact between each alternative.

Alternative A: Slightly less impact than the Proposed RMP.

Alternative B: Slightly less impact than the Proposed RMP.

Alternative C: Slightly greater impact than the Proposed RMP, due to designations of wider utility corridors.

Alternative D: Substantially less impact than the Proposed RMP to other resources and uses, but much greater impact to renewable energy because no new rights-of-way would be designated, nor would there be new land use authorizations.

4.28.14 Travel Management and Off-highway Vehicle Use

Geographic Area for Analysis

The geographic area for cumulative impacts associated with travel management and off-highway vehicle use is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Under the Proposed RMP, off-highway use would be restricted to designated roads and trails. This would have a large impact on motorized recreational opportunities. The more proactive approach to prioritizing road and trail designations through an updated transportation plan would have long term impacts to travel management. These changes in approach, however, would substantially reduce the impacts of vehicles and off-highway vehicles on other resources throughout the planning area.

Impacts of the Interrelated Projects

Impacts from interrelated projects would occur due to the paving of Kane Springs Road, the development of a road from Caliente to Mesquite, development of the proposed Department of Energy and Toquop rail lines, and an increase in demand for recreational off-highway vehicle use. New roads could improve accessibility while increased usage of roads and trails could increase maintenance needs and travel times. The proposed rail line could interfere with existing roads and trails and necessitate creation of new segments parallel with the rail lines leading to safe crossing points. Some of the interrelated projects would tend to increase vehicle and off-highway vehicle use on some designated roads and trails, thereby contributing cumulatively to the impacts of travel management and off-highway vehicles on other resources throughout the planning area.

Cumulative Impacts Conclusion

The cumulative impacts of travel management and off-highway vehicle use would occur through the degradation of transportation resources, and changes in designation and management of transportation resources. The reduction of cross-country off-highway vehicle use and the prioritization of road and trail designations through an updated transportation plan would have short and long term impacts to travel management, but would reduce off-highway vehicle use opportunities and impacts of such use on other resources. The interrelated projects would have minimal effects on transportation planning and road and trail designations, although new housing and energy development could contribute additional traffic and increase the need for road maintenance.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

The primary factor involved for impacts associated with travel management and off-highway vehicle use is the number of roads and the amount of land available for travel and off-highway vehicle use.

Alternative A: Less impact than the Proposed RMP to travel management, but substantially greater impacts of travel on other resources.

Alternative B: Greater impact than the Proposed RMP to travel management and similar impacts of travel on other resources.

Alternative C: Less impact than the Proposed RMP to travel management and similar impacts of travel on other resources.

Alternative D: Greater impacts than the Proposed RMP to travel management, but substantially fewer impacts of travel on other resources.

4.28.15 Recreation

Geographic Area for Analysis

The geographic area for cumulative impacts associated with recreation includes the planning area and population centers outside the planning area that lie within a reasonable driving distance for recreational activities (e.g., Clark County).

Impacts of the Proposed RMP

Impacts to recreation under the Proposed RMP include a reduction of areas offering motorized recreation opportunities, an increase in special recreation management areas, and a potential increase in wildlife, creating more viewing and hunting opportunities. The designation of 20 ACECs would provide management to protect resources in these areas, providing passive recreation opportunities. The elimination of areas open to cross-country off-highway vehicles use would reduce motorized recreation opportunities. The designation of five special recreation management areas totaling over 1.2 million acres and four motorcycle special recreation permit areas totaling approximately 1.33 million acres would serve to focus recreation activities in areas that could be managed to protect relevant resources and the recreation setting. Management activities could potentially place stipulations on outfitter and guide permits, thus affecting recreational hunting opportunities. This overall management approach would substantially reduce impacts from recreational activities on other resources.

Impacts of the Interrelated Projects

Impacts from interrelated projects would occur due to an increase in demand for recreational off-highway vehicle use that would put more pressure on existing resources, and the rebuilding and expansion of reservoirs which would provide more recreational opportunities in the long term. The general effects of the interrelated projects are expected to range from being neutral to substantially increasing the recreational demands within the planning area.

Cumulative Impacts Conclusion

The cumulative impacts to recreation could occur through the degradation of recreation resources, changes in designation and management of recreation resources, and changes in accessibility to and availability of recreation resources. Interrelated projects would have a mixed impact on recreation. Rebuilding of dams and expansion of lakes could reduce recreation opportunities in the short term, while creating an overall increase in recreation opportunities in the long term. Increased residential development and population in the planning area and adjacent areas would lead to an increase in demand for recreational opportunities, with associated increases in impacts to other resources.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

The primary factor involved for impacts to recreation is the quantity of land available for recreational activities, and the quality of recreational opportunities available upon that land.

Alternative A: Less impact than the Proposed RMP.

Alternative B: Similar impact to the Proposed RMP.

Alternative C: Slightly greater impact than the Proposed RMP.

Alternative D: Greater impact than the Proposed RMP due to a reduction of recreation opportunities.

4.28.16 Livestock Grazing

Geographic Area for Analysis

The cumulative effects area for livestock grazing includes the entire planning area, a few grazing allotments that cross the planning area boundary (some of these are administered by the Ely Field Office and others are administered by adjoining Field Offices), and the scattered locations throughout Nevada and Utah from which allotment permittees bring livestock to graze within the planning area.

Impacts of the Proposed RMP

The Proposed RMP could affect the current levels of grazing use and the area available for grazing, especially in relation to sheep and goat grazing on 12 allotments in occupied desert bighorn and Rocky Mountain sheep habitat. Adjustments to animal unit months for sheep grazing would be subject to on-the-ground review and evaluation when permit changes are considered. It also would enhance the flexibility of the Ely Field Office to administer grazing permits to meet specific needs on a site-specific basis, managing allotments that become vacant, for any reason, including relinquishment to best meet site-specific and RMP objectives. The allotment evaluation and term permit renewal process would continue to evaluate the 54,357 animal unit months current active use of sheep grazing on approximately 100,000 acres of occupied bighorn sheep habitat within the decision area. Any changes made to livestock use or management resulting from evaluations would continue to affect vegetation, fish and wildlife habitat, wild horse habitat, special status species habitat, cultural resources, visual resources, fire management, and noxious/invasive weed management. These impacts, however, generally would be reduced under the Proposed RMP as a result of the watershed analysis process, and the allotment evaluation and term permit renewal process. Livestock grazing would be indirectly affected by changes in several other resource programs. For example, the extensive vegetation treatments to restore vegetation resiliency would result in short-term reductions in forage and long-term increases in forage available for livestock grazing; a reduction in wild horse herd management areas generally would reduce conflicts with livestock; proposed land disposals would reduce the lands available for grazing; changes in management of off-highway vehicle use and recreation would tend to concentrate and redistribute potential conflicts with livestock grazing; while energy development, mineral extraction, and utility rights-of-way would tend to create inconsequential conflicts with livestock by reducing forage or imposing some constraint on livestock grazing.

Impacts of the Interrelated Projects

The primary past actions that have affected vegetation resources and thereby current livestock grazing in the planning area are historic mining activities and other human-caused surface disturbances, wildland fires and fire suppression, and historic grazing practices that have contributed to current ecological conditions. Surface disturbances have affected only a small percentage of the total area within the planning area; past grazing practices (including use by livestock, wild horses, and wildlife) and fire suppression, however, have been major contributors to current deteriorated vegetation conditions throughout the planning area. Partially due to these conditions, the spread of invasive and noxious weeds now threatens most of the ecological systems in the planning area.

Present actions affecting livestock grazing are mainly those that reduce the areas available for grazing or the level of forage production on those areas. Key examples include drought conditions, wildland fires, land disposal actions, and special designations that restrict grazing.

Key future actions (aside from the Proposed RMP) anticipated to affect livestock grazing include potential restrictions associated with any additional species listings under the Endangered Species Act (a reduced or remote probability under the Proposed RMP), and the same natural processes mentioned above including fire and drought. Each of these has the potential to either reduce areas available for grazing or the level of forage production on the available area. Additionally, several of the reasonably foreseeable actions could contribute to additional surface disturbances, loss of vegetation, and impediments to livestock movement within various allotments.

Cumulative Impacts Conclusion

The impacts of the Proposed RMP and interrelated projects to livestock grazing would reduce forage for livestock in the short-term on any given treatment area during vegetation treatment activities and generally increase forage over the long-term as treated vegetation communities reach their potential productivity. Interrelated projects typically would reduce the area available for grazing. Overall the cumulative effects would enhance available forage on a long-term basis as the increasing forage productivity on treated areas offsets and later exceeds future incremental reductions associated with interrelated projects. Impacts from the allotment evaluation and term permit renewal processes are expected to continue to meet RMP goals and objectives, including the standards for rangeland health.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factor involved is the acreage of current livestock grazing area that would be temporarily removed for watershed treatment, fire rehabilitation, or temporary conflicts with other users. The primary long-term factors include permanent or long-range losses for land disposals, special designations, and habitat restrictions associated with potential additional species listed under the Endangered Species Act. Overall summary assessments of these combined factors follow below by alternative.

Alternative A: Less short-term, greater long-term impacts to livestock grazing than the Proposed RMP.

Alternative B: Greater short-term, greater long-term impacts to livestock grazing than the Proposed RMP.

Alternative C: Same short-term, greater long-term impacts to livestock grazing than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts to livestock grazing than the Proposed RMP. However, impacts of livestock grazing on other resources would be eliminated under this alternative.

4.28.17 Forest/Woodland and Other Plant Products

Geographic Area for Analysis

The cumulative effects area for forest/woodland and other plant products includes pinyon-juniper woodlands throughout east-central Nevada since both the demand for forest/woodland products within the planning area and alternative supply sources involve areas extending beyond the planning area boundaries.

Impacts of the Proposed RMP

The direct effects of the Proposed RMP would include removal of pinyon and juniper trees in a variety of situations to achieve the desired range of conditions for woodland sites (see Sections 2.4.5, 3.5, and 4.5, Vegetation). These actions may reduce the short-term production of pinyon pine nuts and other products in localized areas; however, the expected level of production for most forest/woodland products in the planning area would continue to exceed the anticipated demand over the long term (see Section 4.17, Forest/Woodland and Other Plant Products). The Proposed RMP also would allow and encourage harvesting of a greater variety of forest/woodland and other plant products within the planning area. Indirect effects of the Proposed RMP on forest/woodland and other plant products would include reduced disturbance by off-highway vehicles in woodland communities in large portions of the planning area and reduced risk of catastrophic fire events in overmature woodlands over the long term as vegetation treatments are used to achieve the desired range of conditions. The Proposed RMP also would increase diversity of age classes within the various plant communities, ensuring sustained yield for future generations.

Impacts of the Interrelated Projects

The primary past actions that have affected production of forest/woodland and other plant products are historic mining activities and other consumptive uses of fuelwood, various human-caused surface disturbances, wildland fires, and historic grazing practices. Surface disturbances and fires have affected only a small percentage of the total area within the planning area, but fuelwood harvest occurred over vast areas during the mid to late 1800s and early 1900s. Aggressive fire suppression has been a major contributor to current woodland conditions throughout the planning area. These past actions, along with climate fluctuations, have contributed to the expansion of pinyon pine and juniper into areas once dominated by sagebrush.

Present actions affecting vegetation composition and ecological health, and thereby production of forest/woodland and other plant products, include livestock grazing, wild horse management, wildlife fire management, watershed management, and spread/control of invasive species. To a lesser degree, other land uses such as harvest of forest/woodland and other plant products, geology and mineral extraction, rights-of-way, transportation, wildlife management, and recreation affect woodland conditions in localized areas. Various natural factors such as drought conditions and wildland fire use ignitions also affect woodlands and production of other plant products.

Key future actions, outside the Proposed RMP, anticipated to affect forest/woodland and other plant products include creation of additional rights-of-way, and the same natural processes mentioned above including fire, drought, disease, and insect infestations. Several of the reasonably foreseeable actions could contribute to additional surface disturbances and loss of woodland communities, especially in relation to rights-of-way and land disposals. These have the potential to alter distribution of vegetation communities or contribute to further ecological deterioration with increased spread of invasive species and increased risk of major fire events. Most of these are actions directly addressed in this RMP rather than being cumulative effects contributed by external factors. However, spread of insect infestations such as the Ips beetle, which is now affecting sizeable areas throughout the western U.S., may dramatically alter the regional supplies of pinyon pine nuts. Thus, production of pinyon pine nuts throughout the planning area may be directly affected by local infestations, and demand may be affected as infestations occur in other portions of the region.

Cumulative Impacts Conclusion

The impacts associated with the Proposed RMP and interrelated projects would generally result in reduced acreage of dense, overmature woodlands, increased diversity of age classes within most woodland sites, healthier and more resilient overall woodland communities, and comparable or potentially increased annual production of forest/woodland products on a sustained yield basis.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factors involved are those that affect the production rate and harvest of key forest/woodland products such as fuelwood and pinyon pine nuts. The primary long-term factors include actions that would impact the distribution and resiliency on pinyon-juniper woodlands, such as wildland fires and insect infestations.

Alternative A: Less short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Same short-term and long-term impacts as the Proposed RMP.

Alternative C: Same short-term and greater long-term impacts as the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts than the Proposed RMP.

4.28.18 Geology and Mineral Extraction

Geographic Area of Analysis

The geographic area for cumulative impacts associated with the minerals program is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Under the Proposed RMP, exploration and development for the various categories of minerals would be conducted in accordance with established rules and regulations in a program that allows for reasonable access to lands and provides protection for other resources. The primary impact to other resources would be the potential additional surface disturbance of approximately 18,300 acres over the reasonably foreseeable future. Over the long term, most of these impacts can be mitigated.

Impacts of the Interrelated Projects

The impacts of most of the interrelated projects (as listed in **Table 4.18-2**) to minerals exploration and development would be minimal. Several of the interrelated projects would contribute to increased local demand for sand, gravel, ballast rock, and other types of construction materials. Conservation plans for greater sage-grouse and species under the Endangered Species Act may affect mineral exploration and development. For instance, habitat constraints could affect economic recoverability or have the effect of completely precluding development of mineral resources. Several of the interrelated projects also would contribute to additional surface disturbance of public lands within the planning area, thus adding to the cumulative disturbance area and resultant impacts to various resources.

Cumulative Impacts Conclusion

Impacts of the Proposed RMP and certain interrelated projects on mineral exploration and development could be restrictive, with potential impacts coming primarily from interrelated projects involving endangered species recovery and protection. Cumulative impacts from mineral exploration and development plus interrelated projects would focus primarily on increased surface disturbances and resultant effects on other resources as shown in **Table 4.28-1**.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

Cumulative impacts of the other alternatives would be similar to the Proposed RMP except for Alternative D under which additional mineral development and other industrial activities involving public lands would be severely restricted.

Alternative A: The cumulative impacts of Alternative A would be less than the Proposed RMP.

Alternative B: The cumulative impacts of Alternative B would be the same as the Proposed RMP.

Alternative C: The cumulative impacts of Alternative C would be the same as the Proposed RMP.

Alternative D: The cumulative impacts of Alternative D would be essentially limited to the impacts of past mineral development activities plus potential future locatable mineral development restricted to less than half the total decision area.

4.28.19 Watershed Management

Geographic Area for Analysis

The cumulative effects area for watershed management consists of the area within the planning area boundary including land either administered by other agencies or privately owned, plus those portions of individual watersheds that cross the planning area boundaries into areas managed by adjoining BLM Field Offices.

Impacts of the Proposed RMP

Direct effects of the Proposed RMP on watershed management would be to prioritize the watersheds to be treated under the Vegetation Resources Program and to optimize the allocation of additional vegetation production (forage) on areas following watershed analysis and treatment. The prioritization of watershed for analysis and treatment places 41 watersheds in a high priority category to be analyzed within the next 10 years and the remaining 20 watersheds in a low priority category to be analyzed beyond the next 10 years. This prioritization approach focuses initial efforts in those watersheds where the combination of treatment needs, affected resource values (e.g., special status species), and expected beneficial effects are considered to be greatest. Following watershed treatment the additional forage produced on the treated areas would be allocated to livestock, wild horses, and/or reserved for watershed maintenance and wildlife, depending on the degree of watershed function.

Impacts of the Interrelated Projects

The primary past actions that have affected current watershed condition and ecological health are historic mining activities and other human-caused surface disturbances, wildland fires, and historic grazing practices. Surface disturbances and fires have affected only a small percentage of the total area within the planning area. Past grazing management and aggressive fire suppression, however, have been major contributors to current deteriorated ecological conditions throughout the planning area. Partially due to these conditions, the spread of invasive and noxious weeds now threatens most of the ecological systems in the planning area, accentuating the need for prompt and effective restoration treatment.

Present actions affecting watershed management (prioritization) are mainly those that affect the vegetation composition and ecological health of watersheds. Key examples include livestock grazing, wild horse management, drought conditions, wildland fires, and spread of invasive species. To a lesser degree, other land uses such as mineral extraction, rights-of-way, transportation, wildlife management, and recreation affect watershed conditions in selected areas.

Key future actions anticipated to affect watershed management include grazing by livestock and wild horses, creation of additional rights-of-way, potential restrictions associated with any additional species listings under the Endangered Species Act (a reduced or remote probability under the Proposed RMP), and the same natural processes mentioned above including fire, drought, and climate change. These have the potential to contribute to further deterioration of watershed conditions or affect the timing and selection of watershed treatments available for restoration. The potential for such effects would diminish as increasingly greater portions of the planning area are restored to resilient vegetation conditions. Additional rights-of-way granted throughout the planning area would result in alteration of surface drainage patterns and could lead to accelerated erosion and sedimentation on a localized basis.

Cumulative Impacts Conclusion

Most of the interrelated projects have individually localized, but cumulatively widespread, effects on ecological health and watershed function, depending on the nature and areal extent of disturbances involved. On a short-term basis, the Proposed RMP would tend to be additive to such impacts, but on a long-term basis, the vegetation improvement associated with the treatments should more than offset the effects of the interrelated projects. This expectation of improved conditions, however, could be delayed or reduced by extended periods of drought, major insect infestations, or disease outbreaks. In other cases, insects and disease could help in meeting management goals.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factors involved are those that affect the current condition of watersheds or constrain the selection of treatments and resultant success for restoration of deteriorated sites. The primary long-term factors include actions that would impact the maintenance of resiliency on restored areas, such as grazing by livestock and wild horses.

Alternative A: Greater short-term, greater long-term impacts on ecological health and watershed management than the Proposed RMP.

Alternative B: Same short-term, same long-term impacts on ecological health and watershed management as the Proposed RMP.

Alternative C: Same short-term, greater long-term impacts on ecological health and watershed management than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts on ecological health and watershed management than the Proposed RMP.

4.28.20 Fire Management

Geographic Area for Analysis

The cumulative effects area for fire management includes the planning area and surrounding jurisdictions that also manage fires, such as other BLM Field Offices and National Forest Ranger Districts.

Impacts of the Proposed RMP

The primary direct effect of the Proposed RMP would be substantially greater use of prescribed fire and wildland fire, along with herbicides and mechanical treatments, as vegetation management tools in the vegetation treatment process. Since more fires would be involved, there is a greater short-term risk of a prescribed fire escaping from control, but the effects of vegetation treatments, including the use of fire, would reduce the risk of catastrophic fire events on a long-term basis. Increased use of prescribed fire and other vegetation treatments in wildland urban interface areas would reduce the current fuel loading of these areas and the associated risks of larger fires that would jeopardize human safety and property. Direct effects of the proposed fire management actions would include short-term reductions in forage and habitat for wildlife, wild horses, and livestock on localized areas where fire is used in vegetation treatments. As with the use of other vegetation treatment tools, the long-term effects would be more forage and habitat for these same resource users. Increased use of fires is expected to result in more frequent smoke emissions spread over smaller areas and over shorter time periods when compared to the effects of larger wildland fires.

Impacts of the Interrelated Projects

The primary factors that have affected fire management (and fire history) within the planning area are the same factors that have affected vegetation and ecological health including historic mining activities, historic grazing practices, historic fuelwood harvest, past fire suppression efforts, and expansion of weedy annual species such as cheatgrass. Surface disturbances and fires have affected only a small percentage of the total area within the planning area, a smaller percentage than would have been affected in the absence of fire suppression efforts. Past grazing practices and fire suppression efforts have been major contributors to current deteriorated ecological conditions throughout the planning area. Past fire suppression activities have resulted in dense or overmature stands of pinyon-juniper and sagebrush in numerous areas with accumulation of heavy fuels in many woodland areas. Partially due to these factors plus drought and other climatic changes, the spread of invasive and noxious weeds has provided an abundance of fine fast burning (flashy) fuels across much of the region and contributed to a shorter fire cycle in the affected areas.

Present management actions and natural events affecting fire management include primarily factors addressed herein as parts of Alternative A in Section 4.20, Fire Management, that provide potential ignition sources (e.g., recreation, off-highway vehicle use, and mineral development) and factors that affect fuel supply (e.g., vegetation treatments, livestock grazing, wild horse management, harvest of forest/woodland products, watershed management, and natural events such as spread of invasive species). Interaction of fire management with actions external to the public lands of the planning area primarily involves the presence of potential ignition sources on adjoining properties outside the Ely Field Office's jurisdiction. For example, wildland fires commonly originate along highways and railroad rights-of-way or from human activities on residential and commercial properties adjoining public lands. Various natural factors such as drought conditions and thunderstorms also affect fire management.

Key future actions (aside from the Proposed RMP) anticipated to affect fire management include construction activities, recreational uses, vehicular traffic, railroad traffic, industrial and residential development adjacent to public lands, and the same natural processes mentioned above including drought, climate change, and continued spread of invasive species. All of the human-related reasonably foreseeable actions mentioned above are expected to provide additional potential fire ignition sources relatively proportional to the level of activity involved.

Cumulative Impacts Conclusion

The cumulative impacts on fire management involve the effects of the Proposed RMP (increased use of prescribed fires to achieve desired range of conditions for vegetation and greater flexibility in responding to accidental or natural ignitions) offsetting the increased frequency of accidental ignitions expected from the escalating use of the planning area for such activities as recreation, industrial development, and off-highway vehicle use.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

In this section, the alternatives are compared on the basis of how they affect overall risks associated with fire and the ability of the Ely Field Office to use natural and prescribed fire as a tool in achieving the stated vegetation management goals. In general, these comparisons are dependent on factors addressed within Section 4.20, Fire Management, and are not driven by external factors associated with a cumulative analysis.

Alternative A: The continuing increase in both flashy and heavy fuels would result in greater short-term and long-term impacts than the Proposed RMP.

Alternative B: Similar short-term and long-term impacts as the Proposed RMP.

Alternative C: Short-term impacts may be similar to or greater than the Proposed RMP; long-term impacts would be greater than the Proposed RMP.

Alternative D: Both short-term and long-term impacts would be greater than the Proposed RMP.

4.28.21 Noxious and Invasive Weed Management

Geographic Area for Analysis

The cumulative effects area for noxious and invasive weed management includes the planning area plus surrounding areas that could be the source of weed seeds transported by motor vehicles, construction vehicles, off-highway vehicles, and railroads.

Impacts of the Proposed RMP

Direct effects of the Proposed RMP on management of invasive and noxious weeds would include widespread treatment of weed populations in association with vegetation treatments to achieve the desired range of conditions within various vegetation communities. Treated areas at or near these desired conditions would have a lower probability for invasion and spread of invasive or noxious weed species. These management activities would improve vegetation resiliency in the long term, but do involve some short-term risk of greater weed spread in the event of treatment failure in drought years or due to other circumstances. Indirect effects of the Proposed RMP include the reduction in disturbance and seed spread from uncontrolled widespread use of off-highway vehicles, the improvement of vegetation communities in wild horse herd management areas currently unable to support existing populations, and improved protection of vulnerable sites such as riparian areas.

The noxious and invasive weed management program has the potential to impact a variety of other resources, including wildlife and special status species, through the toxicity effects associated with pesticides. Under the Proposed RMP and the Ely Field Office's use of chemicals in accordance with applicable BLM policy and label directions, such impacts are expected to be minimal.

Impacts of the Interrelated Projects

The primary past actions that have affected noxious and invasive weed management are those factors that have contributed to the introduction and spread of these weed species throughout the planning area. Key actions include historic mining activities, road construction, vehicle traffic, local agriculture, other human-caused surface disturbances, wildland fires, historic grazing practices, and drought. Although surface disturbances and fires have affected only a small percentage of the total area within the planning area, they provided fresh barren areas for colonization by invasive species. Past grazing practices (including use by wild horses and wildlife) and aggressive fire suppression have been major contributors to current deteriorated vegetation conditions throughout the planning area, which have effectively reduced the ability of native perennial species to compete against weedy species invading native vegetation communities. Agricultural practices, highway and railway traffic, livestock movement, and recreational activities have been common vectors helping to introduce and spread propagules (seeds, spores, etc.) of invasive species.

Present actions affecting noxious and invasive weed management include agriculture, livestock grazing, wild horse management, mineral development and other construction activities, drought conditions, wildland fires, insect infestations, vegetation/watershed treatments, land disposal actions, recreation, highway traffic, and off-highway vehicle use. Several of these various actions have been addressed in Alternative A in Section 4.21 through specific types of management actions. Others, however, are not subject to Ely Field Office jurisdiction based on where they occur (often on adjoining private lands) or the nature of the activity (e.g., highway traffic, drought, and insect infestations).

Key future actions anticipated to affect noxious and invasive weed management include the same array listed above plus additional rights-of-way and land disposals, most of which are addressed as parts of the Proposed RMP. Each of these actions presents additional risk of introduction and dispersal of noxious or invasive weed seeds.

Cumulative Impacts Conclusion

The Proposed RMP would work to control the spread and reduce the occurrence of invasive and noxious weed species in the planning area. At this time, however, it is undetermined whether the rate of vegetation treatment and improvement toward the desired range of conditions would be adequate to offset the recently increasing rate of introduction and spread of invasive and noxious species, some of which is associated with interrelated past, present, and future projects.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

On a short-term basis, the primary factors involved are those that affect the introduction and spread of invasive species, contribute to loss of native vegetation diversity and vigor, or constrain the selection of treatments and resultant success for restoration of deteriorated sites. The primary long-term factors include actions that would impact the maintenance of resiliency on restored areas, such as grazing by livestock and wild horses.

Alternative A: Same short-term, greater long-term impacts on management of noxious and invasive weeds than the Proposed RMP.

Alternative B: Same short-term, lesser long-term impacts on management of noxious and invasive weeds than the Proposed RMP.

Alternative C: Same short-term, greater long-term impacts on management of noxious and invasive weeds than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts on management of noxious and invasive weeds than the Proposed RMP.

4.28.22 Special Designations

Geographic Area for Analysis

The geographic area for cumulative impacts to special designations is the area within the boundaries of the planning area.

Impacts of the Proposed RMP

Under the Proposed RMP, 20 ACECs totaling approximately 317,800 acres and two new back-country byways would be designated. These designations would provide enhanced protection and management emphasis for the relevant resources of these sites. Eight areas totaling 2,155 acres would be dropped from special designation, which would have minimal impact as management prescriptions under the Proposed RMP have been determined to adequately protect the resource values associated with these areas. Designation of the additional ACECs also would result in potential constraints related to uses of other resources in the areas, thereby impacting other resource programs.

Impacts of the Interrelated Projects

The interrelated projects would increase access to and activity within the special designation areas, the latter resulting from increased population due to residential development. Impacts to special designations could result in the degradation of special designation areas, changes in designation of special designation areas, changes in access to special designation areas, and changes in management prescriptions for special designation areas. For example, impacts from interrelated projects would occur due to an increase in access to the desert tortoise ACECs in the southeastern part of the planning area through the development of a road from Caliente to Mesquite, development of the proposed Department of Energy and Toquop rail lines, and the paving of the Kane Springs Road. These interrelated projects could potentially result in increased mortality of desert tortoise through collisions with vehicles.

Cumulative Impacts Conclusion

Impacts to special designations under the Proposed RMP would be an increase in areas managed as ACECs, providing more effective protection of resources, and the creation of new back-country byways. Impacts from the interrelated projects would include increased use of the designated ACECs and back-country byways, resulting in resource degradation and increased need for management by the Ely Field Office.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

The primary factor involved for impacts to special designations is the quantity of land given special designations, and the management prescriptions for these lands.

Alternative A: Less impact than the Proposed RMP.

Alternative B: Similar impact to the Proposed RMP.

Alternative C: Slightly greater impact than the Proposed RMP.

Alternative D: Less impact than the Proposed RMP since the need for special designations would be eliminated.

4.28.23 Economic Conditions

Geographic Area of Analysis

For cumulative economic and social effects, the external boundaries of the planning area and surrounding communities extending as far as Las Vegas constitute the relevant geographic area of analysis. This area would capture the preponderance of direct and indirect economic impacts associated with the interrelated projects located within and adjacent to the planning area's boundaries and the management actions associated with the Proposed RMP. Many of the demands and pressures affecting the Ely Field Office originate outside of the planning area and, hence, are captured in this cumulative analysis area.

Impacts of the Proposed RMP

The Proposed RMP would result in slight to moderate, long-term impacts in the form of increased additional local employment opportunities, personal income, sales for local businesses, and tax revenues for local governments. Some of the gains would arise as a result of the increased funding for restoration, while other gains would accrue over the long term, as the level of developed and organized recreation and woodland commodity use increases in response to ecological health restoration. Resident households associated with the incremental jobs would spawn demand for housing along with visitor populations, and demand on local public facilities and services.

Impacts of the Interrelated Projects

Virtually all the identified interrelated past, present, and reasonably foreseeable projects have actual or potential economic and social consequences. Such consequences manifest themselves in the following contexts:

- Capital investments associated with past and present projects result in the development of residential, commercial, and public infrastructure with economic lives extending beyond that of the interrelated project itself.
- Short- and long-term influences of activities in one period that establish land use patterns affecting economic and social conditions in subsequent periods. For example, once built, highways and state parks can stimulate recurring local economic stimulus related to recreational visitors, tourists, and other travelers.
- Private real estate speculation and development and public sector land use, facility, and service planning initiatives prompted by prospective future activities, whether real or merely suggested by information such as the mapping of high potential mineral development areas.
- Effects tied to actions, activities, and projects located outside the planning area, but having indirect connections to resources within the planning area. Examples of such actions include past, current, and

potential future Department of Defense and Department of Energy activities on federal lands adjacent to the planning area, accessed via highway and railroad connections in the planning area.

- Reasonably foreseeable actions can generate subtle economic impacts in the present, with more tangible economic effects arising as a project transitions from concept to reality. Cumulative effects are shaped not just by the characteristics of the specific project, but also by other activities occurring in the same timeframe. In fact, the degree of overlap in schedules and relative scales of interrelated projects are critical factors influencing cumulative impacts. The timing aspects of the majority of the interrelated projects is not available to include in this discussion.

- Temporary, short-term and long-term effects on local employment, population, housing demand, community facilities and services, fiscal conditions, and social values and attitudes towards public land management would be expected.

The recent reopening of the Robinson mine, other mineral development projects, changes in agricultural development, the Yucca Mountain Nuclear Repository, and the White Pine Energy Station and Ely Energy Center are the projects having the highest potential for short and long-term economic and social effects in the planning area. The short-term effects would occur during initial project start-up and construction, with long-term effects associated with the ongoing operations. Water development projects also could have substantial long-term consequences depending upon the timing and use/application of the subsequent water production. These interrelated actions may be accompanied by both positive and negative economic and social effects.

The reasonably foreseeable projects with potential long-term employment effects tend to be somewhat geographically clustered in the northern and southern portions of the planning area. Hence, associated economic and social impacts would tend to be concentrated in the Ely and Caliente areas, or in new development areas such as Coyote Springs or involved with the Lincoln County Land Act and the Lincoln County and White Pine County Conservation, Recreation, and Development Acts. Of themselves, large-scale mineral and energy development projects, the Yucca Mountain – Caliente rail line, and new land development activities are those with the highest potential to be important. That potential increases if multiple projects are simultaneously active. At the same time, the possibility exists for some offsetting impacts; for instance, the expansion of one mine or startup of an energy development project as another mine is closing, thereby dampening the impacts associated with the former.

Cumulative Impacts. Because of the factors described above, almost all of the interrelated projects have actual or potential cumulative economic and social impacts when considered in conjunction with the Proposed RMP. Potential cumulative economic effects associated with the Proposed RMP include the linkages between economic and population growth in Clark County and recreation use, local water development, and demands for land disposal, energy production, transmission capacity, and residential development within the planning area. These uses and demands create pressures on local agricultural operations through indirect impacts on grazing and demand for developable land that could trigger contractions in the local agricultural sector and its economic contributions to the local economy. The increase in BLM funding for watershed restoration, if it coincides with a resurgence in mining and other energy development, could create short-term synergistic impacts on the local labor market, housing, and community service conditions. The cumulative effects of these influences accentuate the on-going transition between a commodity-based and more service-based economy.

Another series of cumulative effects involves land use and administration of public lands in and around the planning area by multiple governmental agencies. The Ely Field Office and U.S. Forest Service management of vast tracts of land and resources in the region generate economic effects that vary over time, but are relatively consistent from year-to-year during the short-term. However, activities at the Nellis Air Force Base flight range and the Nevada Test Site, including the potential construction at the Yucca Mountain Nuclear Repository and transportation network, are known to fluctuate and could dramatically alter the planning area's economic setting over the long-term. A decision to proceed with the Yucca Mountain Nuclear Repository could increase demand for land disposal, water development, and recreation and commodity use in the planning area, potentially affecting the Ely Field Office's management. Completion of the Lincoln County Land Act sale and subsequent new development would generate cumulative social and economic effects in nearby Mesquite and Clark County. Employment and population growth also could accompany the project, with the scale and timing dependent on the transportation mode and access routes selected. The development-related economic and social impacts would be substantial.

Cumulative economic impacts would arise in conjunction with Congressionally-mandated land and realty actions in Lincoln and White Pine counties, as they could give rise to future economic development activities, impact future management and watershed restoration priorities within the planning area, and the locations and levels of use on public lands, all of which could indirectly affect local economic conditions.

Potential cumulative economic impacts arising from the other projects could create temporary and short-term economic fluctuations, varying in scale, but similar to those characterizing the region's recent history. For example, mineral resource development in the northern portion of the planning area could result in population, economic, and social effects to nearby communities outside the planning area, such as Elko, Nevada. Most, if not all, of those communities already host businesses and residents associated with mineral development elsewhere in eastern Nevada. As such, the changes may be viewed more in the context of normal or typical events and less as fundamental changes in the region's economic environment.

The cumulative economic effects described above have corollary cumulative effects in terms of social and community well-being. In the case of past actions, the cumulative effects manifest themselves as physical vestiges of the activity, as well as in present social conditions and attitudes. Historical and existing social linkages bind together generations of past, current, and future residents of the region. Past and present residents have contributed to the formation of local governance, community service capabilities, and local organizations and institutions that function today. Development pressures from outside the region may reshape and influence the established social structure and order within the planning area. Given the rural nature of the planning area and the attendant low population base, the opportunities to effect change or address issues within state and federal government arenas may be constrained. The net cumulative effect of these factors maybe a diminished sense of self-determination and local control that characterizes much of the rural West. Cumulative impacts on social conditions associated with the long-term land development activities have the potential to be substantial.

Cumulative Impacts Conclusion

Several of the interrelated projects pose a potential for generating substantial impacts on economic and social conditions in portions of, or across much of the planning area. The greatest likelihood arises in the context of potential long-term changes associated with major future land development activities in southern Lincoln County, the proposed Yucca Mountain Nuclear Repository, water development and pipeline proposals seeking changes in the location and type of use of surface and groundwater resources in the region, and the White Pine Energy Station and Ely Energy Center. The Proposed RMP, and any of the alternatives thereto, would incrementally contribute to those impacts in a cumulative sense, if for no other reason than that several of them would directly or incidentally involve public lands, for utility rights-of-way, for instance. Although the duration, timing, and extent of the overall cumulative effects is indeterminate based on current information, the potential for impacts, including short-term impacts, increases if development of two or more of the interrelated projects were to occur concurrently.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

The potential cumulative economic and social effects do not vary appreciably between the RMP management alternatives, because the scale and timing of the interrelated projects, many of which are outside to the region, have few direct linkages to the key local economic parameters affected by the management alternatives. From a cumulative effects perspective, a key issue is whether differences in the alternatives increase or diminish the likelihood of a present action maintaining its current status or of a reasonably foreseeable future action occurring or not occurring. The potential for cumulative social effects does not vary appreciably between the alternatives because the most pronounced influences affecting these impacts are outside the region.

Alternative A: Additional activity in the region associated with the interrelated projects could accelerate the onset of subsequent use restrictions and economic impacts triggered by declining ecological health.

Alternative B: Potential cumulative effects under Alternative B would include substantial economic impacts to affected ranchers with allotment permits in the areas unavailable due to bighorn sheep and desert tortoise habitat.

Alternative C: Corridor management policies under this alternative may increase the likelihood of one or more of the interrelated energy projects occurring, with resulting small increase in cumulative effects on employment, income, and other economic activity. Land use authorization policies may interact with the Yucca Mountain Nuclear Repository and aid other projects to allow more economic growth and community expansion over time.

Alternative D: The no net loss of public lands provision under Alternative D would result in cumulative interactions with interrelated projects requiring public land for development. The prohibition on land use authorizations would severely limit the development of interrelated projects such as power plants and wind energy farms. However, the timing, location, and scale of the impacts are unknown. The removal of livestock grazing throughout the decision area would result in substantial economic impacts within the planning area and to surrounding areas where some of the affected ranchers may reside.

4.28.24 Social Conditions

See the preceding section on economic conditions.

4.28.25 American Indian Issues

American Indian issues identified through scoping (land disposals, access to sacred sites, pinyon pine nut harvesting, tribal outfitter guide service) and comments expressed by representatives of American Indian groups participating as cooperators in the RMP process were examined in relation to the Proposed RMP. No cumulative impacts from interrelated projects were identified; however, natural processes such as drought, fire, and insect destruction of pinyon pines, would have an impact on future pine nut harvests.

4.28.26 Environmental Justice

Following the definition for cumulative impacts, an impact must result from Ely Field Office management actions before a cumulative impact would occur. Since no environmental justice issues have been identified in relation to the Proposed RMP, no cumulative impacts are anticipated.

4.28.27 Health and Safety

Geographic Area for Analysis

The cumulative effects area for health and safety includes all areas within the planning area boundary plus adjoining areas and communities potentially affected by atmospheric emissions, hazardous materials spills, or wildland fires originating within the planning area.

Impacts of the Proposed RMP

Direct effects of the Proposed RMP would not differ from the other alternatives with respect to health and safety, in that activities under this alternative would be conducted in accordance with applicable regulations and BLM policy regarding health and safety and protection of personal property. Thus, there are no program-specific impacts for health and safety under the Proposed RMP. However, actions from other resource programs such as vegetation and fire management would have substantial effect on health and safety issues. Vegetation treatments, including fuel reduction in wildland urban interface areas, and the fire management plans of the Proposed RMP would reduce the long-term risk of large-scale fires and the risk of personal injuries and destruction of personal property associated with wildland fires.

Impacts of the Interrelated Projects

The primary past actions that contribute to health and safety issues within the planning area are those that contribute to current fire hazards. Numerous other past actions, such as mining and smelting operations, contributed to previous health and safety issues (mine subsidence and smelter emissions) that no longer persist as major public land issues in the area. Past actions contributing to current fire hazard conditions include historic grazing practices, aggressive fire suppression, and various surface disturbances that have either facilitated expansion of annual weed species or lead to accumulation of unusually heavy fuel loads in various vegetation types. Other activities, such as development of roads, railroads, other rights-of-way, agricultural practices, and mineral extraction have contributed to the presence of widespread human activities that constitute potential ignition sources for wildland fires.

Present and future actions potentially contributing to the current and future fire hazards include almost all human activities occurring on the public lands, particularly those that involve construction equipment and activity, traffic and vehicle use, and recreation involving off-highway vehicle use. Thus, almost any of the interrelated projects involving human activity may be a contributing factor in terms of providing an ignition source.

Cumulative Impacts Conclusion

The Proposed RMP would reduce the long term risk of large-scale fires and the risk of personal injuries and destruction of personal property associated with wildland fires, largely offsetting the anticipated increases in wildland fire risk arising from various interrelated projects.

Variation in Cumulative Impacts Between the Proposed RMP and Other Alternatives

The primary factors involved in health and safety issues related to wildland fires include the following (listed from short term to longer term): 1) suppression of wildland fires as necessary to protect persons and property, 2) the prompt and orderly reduction in fuel loading around vulnerable communities (i.e., wildland urban interface management), and 3) reduction of excessive fuel loadings throughout the planning area so that a more natural fire regime may be reestablished with resilient vegetation communities.

Alternative A: Greater short-term, greater long-term impacts than the Proposed RMP.

Alternative B: Same short-term, same long-term impacts as the Proposed RMP.

Alternative C: Same short-term, greater long-term impacts than the Proposed RMP.

Alternative D: Greater short-term, greater long-term impacts than the Proposed RMP.

4.28.28 Summary of Cumulative Impacts

Table 4.28-3, which follows, presents a summary of the cumulative impacts to each resource program for the Proposed RMP. The detailed discussion of cumulative impacts begins in Section 4.28.2.

Table 4.28-3
Cumulative Impacts of the Proposed RMP

AIR RESOURCES
Cumulative impacts include those caused by sources and activities associated directly with the Proposed RMP and those caused by interrelated projects that have occurred historically, projects that are currently underway, and those that might reasonably occur in the future. Air resources in the planning area are mainly affected by mining and vegetation management/fire management practices. Regulatory decisions related to industrial development and mining would help prevent air quality degradation by applying mitigation measures on a case-by-case basis. Three potential electrical generating power projects would affect air quality in the region if constructed. Permitting requirements of the Nevada Division of Environmental Protection and the U.S. Environmental Protection Agency would require modern control technology to limit emissions and impacts from these potential sources. Fire management treatments would include in-depth planning and analysis of potential incident and cumulative air quality impacts to reduce emissions associated with fires. Projected cumulative impacts are of such a nature that the planning area should be able to meet all applicable local, state, tribal, and National Ambient Air Quality Standards under the Clean Air Act (as amended), and help prevent deterioration of air quality within the planning area from all direct and authorized actions.
WATER RESOURCES
Cumulative impacts of the Proposed RMP would be minimized over the long term by extensive vegetation management and administration of other land uses that would consider a balanced ecological system approach. Salinity inputs to the Colorado River system would be reduced over time. Short-term increases in runoff, soil erosion, and related sedimentation may occur on those areas where vegetation treatments occur. Interrelated projects would have the potential to create impacts on both surface and groundwater resources through additional erosion and sedimentation as a result of land disturbance, further consumption of available water resources, and additional releases of undesirable water quality constituents (e.g., industrial chemicals, treated domestic effluent) into receiving waters. The net effects on water resources from the Proposed RMP and the interrelated projects may result in substantial cumulative impacts.
SOIL RESOURCES
Cumulative impacts of the Proposed RMP and interrelated projects would involve a short-term increase of erosion and sedimentation, with accompanying reduction in soil quality, when the activities are initially undertaken. Extensive vegetation treatment in the planning area would, in time, result in substantial reduction of erosion and sedimentation. Similarly, soil quality would increase over the long term as a result of vegetation treatments. Impacts from interrelated project development within the planning area would result in permanent removal or alteration of soil resources in specific areas (such as project footprints or some riparian/wetland areas). Regulatory programs (including permit approval and monitoring processes), and the implementation of best management practices and mitigation measures, would reduce the degree of overall erosion and sedimentation impacts. Soil quality would be lost in the comparatively smaller areas affected by interrelated projects, but would improve over widespread areas with successful vegetation restoration.
VEGETATION RESOURCES
The actions related to the Proposed RMP would enhance vegetation resiliency on a long-term basis, although some elements of the alternative would contribute to temporary loss of vegetation and potential spread of invasive species. Most of the interrelated projects have produced or would result in the removal of native vegetation and potential spread of invasive species, either through physical disturbance or alteration of vegetation communities. The enhanced vegetation resiliency resulting from the Proposed RMP should offset a large portion of the past and potential future disturbance effects from interrelated projects.
FISH AND WILDLIFE
Aquatic
The cumulative effects of interrelated projects in combination with program-specific management under the Proposed RMP would generally improve maintenance and quality of fish habitat in the long term as restoration efforts improve both upland and riparian habitat conditions. This habitat improvement would tend to offset continued habitat losses and damage resulting from various interrelated projects including potential groundwater withdrawal.
Wildlife
The actions related to the Proposed RMP would improve wildlife habitat conditions on the watershed level and landscape level in the short and long term. However, the interrelated projects either have produced or would result in direct wildlife mortality, displacement of wildlife, habitat loss or alteration, and increased habitat fragmentation. The habitat improvement resulting from the vegetation restoration treatments should offset a large portion of the past and potential future habitat losses and damage resulting from interrelated projects.

Table 4.28-3 (Continued)

SPECIAL STATUS SPECIES
Plant Species
The impacts related to the Proposed RMP would have minimal effect on the Ute ladies'-tresses orchid and other special status plants on an overall basis, while at the same time protection of these species would be enhanced in several ACECs. Most of the interrelated projects have produced or would produce minimal effects to special status plants, either through physical disturbance or alteration of vegetation communities. The improved knowledge base and potential mitigation measures related to the Proposed RMP should offset a large portion of the past and potential future adverse effects from interrelated projects.
Aquatic Species
Surface disturbance activities could result in localized water quality changes due to sedimentation or runoff contaminants, and habitat alteration or loss. Several programs such as vegetation restoration and weed management (i.e., tamarisk removal) could increase stream flows and spring discharges. Several of the interrelated projects could result in changes to surface water quantity in various streams or springs (e.g., groundwater withdrawal). In the long term, vegetation restoration could reduce stream flows originating from surface runoff, but could locally increase stream base flows and spring discharges. Other interrelated actions could combine with these water quantity changes to affect habitat for sensitive species. The cumulative effects of interrelated projects in combination with program-specific management under the Proposed RMP would result in impacts on sensitive fish species habitat due to surface disturbance in watersheds, but this would be balanced by an increased rate of maintenance and restoration of habitat for sensitive fish species.
Wildlife Species
The impacts related to the Proposed RMP would improve special status species habitat conditions on the watershed and landscape level in the long term. However, the interrelated projects either have produced or would continue to result in direct mortality, displacement of individuals, habitat loss or alteration, habitat fragmentation, and possible population reductions of some special status species. The special status species habitat improvement resulting from the Proposed RMP should offset a large portion of the past and potential future habitat losses and damage resulting from interrelated projects. However, local greater sage-grouse populations may be reduced in numbers because of development in and around breeding habitat (i.e., leks) regardless of the habitat improvement that may occur elsewhere.
WILD HORSES
The impacts related to the Proposed RMP generally would improve habitat for wild horse herds on a long-term basis, while many of the potential impacts associated with interrelated projects would reduce habitat, but typically to a lesser degree. Thus, the overall cumulative effects would be general improvement in the habitat necessary for long-term herd health and viability.
CULTURAL RESOURCES
There would be a high level of protection of cultural resources under the Proposed RMP (overall decrease in lands available to off-highway vehicle use and livestock/wild horse grazing and the designation of ACECs to protect cultural resources) offsetting the expected increase in visitor and recreation use in the planning area. Thus, the overall cumulative effects would be minimal.
PALEONTOLOGICAL RESOURCES
There would be a high level of protection of paleontological resources under the Proposed RMP (overall decrease in lands available to off-highway vehicle use and mineral development) offsetting the expected increase in visitor and recreation use in the planning area. Thus, the overall cumulative effects would be minimal.
VISUAL RESOURCES
Cumulative impacts to visual resource use would occur through the degradation of visual resources resulting from a number of activities within the planning area. Under the Proposed RMP, impacts to visual resources would be minimal, those impacts mainly being from surface disturbances associated with the vegetation treatments, and the reduction in surface disturbances associated with the elimination of cross-country off-highway vehicle use and the co-location of utility rights-of-way and communication sites. Some interrelated projects would result in surface disturbances, increased air emissions, and local visual impacts. An increase in the area designated as Class II and III and a decrease in the area designated as Class IV would lead to more emphasis on mitigation for visual impacts from proposed actions across the planning area. The designation of the Pony Express Visual Resource Management Class II corridor places the scenic values of this area at a higher level. Interrelated projects would not occur within Class I areas.

Table 4.28-3 (Continued)

LANDS AND REALTY
Cumulative impacts to the management of lands and realty would occur as a result of new avoidance and exclusion areas and management direction encouraging co-location of utility rights-of-way and communication sites. Interrelated projects could increase pressure for development and create a higher demand for developable lands in the planning area. Cumulative impacts of the lands and realty program and interrelated actions on other resources and uses would be largely a function of the collective disturbance areas involved as shown in **Table 4.28-1**.
RENEWABLE ENERGY
Interrelated power plant and transmission line projects could create better access to electrical transmission lines. Interrelated power plants, water development, and residential development projects could impact renewable energy development through the use of water that could otherwise be used for development of concentrated solar power. Cumulative impacts of the renewable energy program and interrelated projects on other resources and uses would be largely a function of the collective disturbance areas involved as shown in **Table 4.28-1**.
TRAVEL MANAGEMENT AND OFF-HIGHWAY VEHICLE USE
The cumulative impacts of travel management and off-highway vehicle use would occur through the degradation of transportation resources, and changes in designation and management of transportation resources. The reduction of cross-country off-highway vehicle use and the prioritization of road and trail designations through an updated transportation plan would have short and long term impacts to travel management, but would reduce off-highway vehicle use opportunities and impacts of such use on other resources. The interrelated projects would have minimal effects on transportation planning and road and trail designations, although new housing and energy development could contribute additional traffic and increase the need for road maintenance.
RECREATION
The cumulative impacts to recreation could occur through the degradation of recreation resources, changes in designation and management of recreation resources, and changes in accessibility to and availability of recreation resources. Interrelated projects would have a mixed impact on recreation. Rebuilding of dams and expansion of lakes could reduce recreation opportunities in the short term, while creating an overall increase in recreation opportunities in the long term. Increased residential development and population in the planning area and adjacent areas would lead to an increase in demand for recreational opportunities, with associated increases in impacts to other resources.
LIVESTOCK GRAZING
The impacts of the Proposed RMP and interrelated projects to livestock grazing would reduce forage for livestock in the short-term on any given treatment area during vegetation treatment activities and generally increase forage over the long-term as treated vegetation communities reach their potential productivity. Interrelated projects typically would reduce the area available for grazing. Overall the cumulative effects would enhance available forage on a long-term basis as the increasing forage productivity on treated areas offsets and later exceeds future incremental reductions associated with interrelated projects. Impacts from the allotment evaluation and term permit renewal processes are expected to continue to meet RMP goals and objectives, including the standards for rangeland health.
FOREST/WOODLAND AND OTHER PLANT PRODUCTS
The impacts associated with the Proposed RMP and interrelated projects would generally result in reduced acreage of dense, overmature woodlands, increased diversity of age classes within most woodland sites, healthier and more resilient overall woodland communities, and comparable or potentially increased annual production of forest/woodland products on a sustained yield basis.
GEOLOGY AND MINERAL EXTRACTION
Impacts of the Proposed RMP and certain interrelated projects on mineral exploration and development could be restrictive, with potential impacts coming primarily from interrelated projects involving endangered species recovery and protection. Cumulative impacts from mineral exploration and development plus interrelated projects would focus primarily on increased surface disturbances and resultant effects on other resources as shown in **Table 4.28-1**.
WATERSHED MANAGEMENT
Most of the interrelated projects have individually localized, but cumulatively widespread, effects on ecological health and watershed function, depending on the nature and areal extent of disturbances involved. On a short-term basis, the Proposed RMP would tend to be additive to such impacts, but on a long-term basis, the vegetation improvement associated with the treatments should more than offset the effects of the interrelated projects. This expectation of improved conditions, however, could be delayed or reduced by extended periods of drought, major insect infestations, or disease outbreaks. In other cases, insects and disease could help in meeting management goals.

Table 4.28-3 (Continued)

FIRE MANAGEMENT
The cumulative impacts on fire management involve the effects of the Proposed RMP (increased use of prescribed fires to achieve desired range of conditions for vegetation and greater flexibility in responding to accidental or natural ignitions) offsetting the increased frequency of accidental ignitions expected from the escalating use of the planning area for such activities as recreation, industrial development, and off-highway vehicle use.
NOXIOUS AND INVASIVE WEED MANAGEMENT
The Proposed RMP would work to control the spread and reduce the occurrence of invasive and noxious weed species in the planning area. At this time, however, it is undetermined whether the rate of vegetation treatment and improvement toward the desired range of conditions would be adequate to offset the recently increasing rate of introduction and spread of invasive and noxious species, some of which is associated with interrelated past, present, and future projects.
SPECIAL DESIGNATIONS
Impacts to special designations under the Proposed RMP would be an increase in areas managed as ACECs, providing more effective protection of resources, and the creation of new back-country byways. Impacts from the interrelated projects would include increased use of the designated ACECs and back-country byways, resulting in resource degradation and increased need for management by the Ely Field Office.
ECONOMIC CONDITIONS
Several of the interrelated projects pose a potential for generating substantial impacts on economic and social conditions in portions of, or across much of the planning area. The greatest likelihood arises in the context of potential long-term changes associated with major future land development activities in southern Lincoln County, the proposed Yucca Mountain Nuclear Repository, water development and pipeline proposals seeking changes in the location and type of use of surface and groundwater resources in the region, and the White Pine Energy Station and Ely Energy Center. The Proposed RMP, and any of the alternatives thereto, would incrementally contribute to those impacts in a cumulative sense, if for no other reason than that several of them would directly or incidentally involve public lands, for utility rights-of-way, for instance. Although the duration, timing, and extent of the overall cumulative effects is indeterminate based on current information, the potential for impacts, including short-term impacts, increases if development of two or more of the interrelated projects were to occur concurrently.
SOCIAL CONDITIONS
See economic conditions.
AMERICAN INDIAN ISSUES
Cumulative impacts, if present, are identified in the corresponding topic areas of Section 4.28.
ENVIRONMENTAL JUSTICE
Following the definition for cumulative impacts presented at the beginning of this section, an impact must result from BLM management direction before a cumulative impact will occur. Since no environmental justice issues have been identified in relation to the Proposed RMP, no cumulative impacts are anticipated.
HEALTH AND SAFETY
The Proposed RMP would reduce the long term risk of large-scale fires and the risk of personal injuries and destruction of personal property associated with wildland fires, largely offsetting the anticipated increases in wildland fire risk arising from various interrelated projects.

4.29 Proposed Mitigation and Potential Effectiveness

Mitigation of impacts can be addressed in many different ways. According to the Council on Environmental Quality regulations, mitigation includes:

a) Avoiding the impact altogether by not taking a certain action or parts of an action.

b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

e) Compensating for the impact by replacing or providing substitute resources or environments (Title 40 Code of Federal Regulations Subpart 1508.20).

Mitigation has been built into the Proposed RMP through the development of management actions that address programmatic management issues, while also reducing impacts. That is, management actions have been structured to avoid or minimize impacts, as specified by the Council on Environmental Quality regulations. Further, the best management practices presented in Section 1 of Appendix F would be implemented by the Ely Field Office on a project-specific basis, as appropriate for site conditions and the proposed disturbance. The Ely Field Office and other BLM offices have developed these best management practices through many years of experience with on-the-ground projects. The following proposed mitigation is in response to anticipated impacts and would be in addition to the best management practices. The potential effectiveness of the proposed mitigation measures is addressed in order for the BLM Nevada State Director to make an informed decision regarding whether to include the proposed mitigation as part of his final decision, documented in the Record of Decision.

Vegetation

Impact: Increased frequency and size of wildland fires in the Mojave Desert due to invasive annual species.

Proposed Mitigation 1: Increase fire suppression forces within the Mojave Desert through the establishment of a fire station in the Mojave Desert and increased aerial resources in Mesquite, Nevada.

Effectiveness: A shorter response time with more suppression forces could reduce the size of wildland fires.

Fish and Wildlife

Impact: Disturbance of wildlife during sensitive times or in sensitive locations as a result of designating special recreation management areas and special recreation permit areas where off-highway vehicle use is anticipated to increase.

Proposed Mitigation 2: The following adaptive management measures may be identified during activity level planning for special recreation management areas and special recreation permit areas to mitigate potential localized disturbances to wildlife: placement of signs and public education at key recreation access areas; identification of seasonal motorized route closures to protect wildlife during sensitive periods in their lifecycle; re-routes of existing roads and trails; permanent closures of existing routes; and the establishment of recreation use limitations.

Effectiveness: These measures would reduce the potential disturbances to wildlife during sensitive times of their lifecycle or sensitive areas identified during activity level planning. Monitoring would be implemented as a component of activity level plans to determine the overall effectiveness of any mitigation measures.

Impact: Loss of wildlife habitat as a result of energy production and mineral development.

Proposed Mitigation 3: Enhance wildlife habitat (based on the acres disturbed/lost) in another area away from the energy or mineral project site. Enhancement would be performed on a case-by-case basis in accordance with NEPA, and funding would be provided by the Proponent.

Effectiveness: Improving wildlife habitat away from the project site would provide quality habitat for those animals that are displaced by the project. This would reduce impacts to wildlife populations in the development area.

Special Status Species

Impact: Impacts to special status sagebrush obligate species from vegetation treatments and restoration.

Proposed Mitigation 4: Initiate quantitative habitat evaluations of areas proposed for treatment to ensure that:

1) Within Wyoming big sagebrush, no more than 20 percent of the greater sage-grouse breeding habitat serviced by any single lek location is treated (including areas burned by wildland fire) within a 30-year period, regardless of the techniques used.

2) In mountain big sagebrush, no more than 20 percent of the greater sage-grouse breeding habitat serviced by any single lek location is treated (including areas burned by wildland fire) within a 20-year period, regardless of the techniques used.

Effectiveness: These measures would maintain adequate greater sage-grouse breeding habitat during the period of vegetation treatments. Site-specific evaluations would occur as part of watershed planning, and follow-up monitoring would be implemented to determine the overall effectiveness of any treatment program.

Lands and Realty

Impact: The disposal and potential development of lands under the military operations areas could adversely affect the vital training of U.S. combat forces and negatively impact military combat readiness.

Proposed Mitigation 5: The two possible forms of mitigation are proposed as follows:

1) The Ely Field Office would provide public notice prior to disposal of public land under military operations areas, acknowledging the risks associated with the development of the land and the possible restrictions to uses that would be compatible with the military operations areas.

2) The Department of Defense proposes that lands disposed under military operations areas would be subject to an easement acknowledging the existing military operations areas and the risks associated with the development of the land. Land use would be restricted to uses compatible with the military operations areas. The specific details of the easement would be approved by the Department of Defense and the Federal Aviation Administration in conjunction with the Ely Field Office at a later date.

Effectiveness: By restricting land use to those uses compatible with military operations areas, the ability to conduct training essential to the combat readiness of the U.S. military would be preserved.

4.30 Unavoidable Adverse Impacts

Unavoidable adverse impacts are impacts that remain following the implementation of mitigation measures, or impacts for which there are no mitigation measures. Some unavoidable adverse impacts occur as a result of proposed management under one or more of the alternatives, while others are a result of public use of the BLM-administered lands within the decision area. For example, watershed restoration activities would be the primary cause of unavoidable adverse impacts from management actions; while public uses such as livestock grazing, mineral development, and off-highway vehicle use would be the primary causes of unavoidable adverse impacts by the public. Potential unavoidable adverse impacts are difficult to quantify and could extend far into the future. The following sections discuss those unavoidable adverse impacts that have been identified for the proposed management actions in the decision area. If a resource program is not mentioned, it was determined that there would be no important unavoidable adverse impacts to that resource or resource use.

Air Quality – Smoke generated from wildland fires, wildland fire use, and prescribed burns would be unavoidable, but impacts would be short term.

Water Resources – Vegetation treatment that is part of watershed restoration could result in increased sedimentation of surface waters. This impact is expected to be short term until new vegetation stabilizes treated areas.

Soils Resources – Vegetation treatment that is part of watershed restoration could result in increased soil erosion. This impact is expected to be short term until new vegetation stabilizes treated areas. Authorized and unauthorized off-highway vehicle use would continue to be a concern as it relates to rutting and soil erosion.

Vegetation and Special Status Plants – Vegetation treatment that is part of watershed restoration would alter vegetation communities and could result in the direct loss of special status plant populations that have not been previously discovered. Field investigations conducted as part of the watershed analysis process would minimize this risk of adversely affecting undiscovered rare plant populations. Special status plants would have better survival prospects in restored watersheds.

Fish, Wildlife, and Special Status Species – Vegetation treatment that is part of watershed restoration, particularly managed/prescribed fire and mechanical tools and techniques, could result in increased sedimentation to surface waters and a reduction of certain types of wildlife habitat. These effects could lead to increased mortality of some individuals on a local basis. These impacts are expected to be short term until new vegetation stabilizes treated areas, and restored watersheds would provide better habitat for fish and wildlife in the long term. Off-highway vehicle use also could disturb sensitive wildlife.

Wild Horses – The public would have less opportunity to view wild horses due to reduction in wild horse management areas.

Cultural Resources – While measures are in place to identify and mitigate impacts to cultural resources, some impacts would be unavoidable. Vegetation treatment tools and techniques have the potential to disturb recorded and unrecorded cultural resource sites. Off-highway vehicle use, other forms of recreation that could result in casual collecting or vandalism, and mineral exploration and development activities would continue to result in adverse impacts to cultural resources. Lastly, natural processes of erosion and weathering would continue to degrade cultural resources.

Visual Resources – Wildland fire and vegetation treatment, particularly wildland fire use/prescribed fire and mechanical tools and techniques, would cause changes in the visual character of those areas affected. Pinyon-juniper woodlands would experience the most noticeable changes. Treated areas may display reduced or unnoticeable visual contrast once vegetation has become reestablished, or they may show signs of human intervention for decades following treatment. Mineral development would have adverse but localized impacts to visual resources. Unauthorized, cross-country, off-highway vehicle travel could create linear scaring of the landscape.

Renewable Energy – The development of wind and solar energy projects would result in unavoidable adverse impacts to a number of resources due to the large amount of land and number of large facilities required for such renewable energy projects. Surface disturbance and facility construction primarily would impact soils, vegetation, wildlife, special status species, visual resources, dispersed recreation, livestock grazing, and weed management. Operation of wind turbines would cause some direct mortality of birds and bats. While mitigation measures would be required in the construction and operation plans submitted by private developers, it would not be possible to mitigate many of the impacts entirely.

Recreation – Watershed restoration and mineral development activities could displace recreation during active periods. Once restoration is established and development areas are reclaimed, recreation could once again take place in these areas. Changes in the amount and patterns of off-highway vehicle use could result in increased conflicts between users and unanticipated changes in recreation resource conditions.

Livestock Grazing – Watershed restoration would modify range conditions, potentially reducing areas available for grazing in treated watersheds until vegetation in treated areas has recovered sufficiently to withstand grazing. In the long term, restored watersheds would provide improved range and increased forage. There would be a loss of grazing on approximately 94,400 acres due to land disposals (76,000), mineral development (18,300), and designation of ACECs (120).

Forest/Woodland and Other Plant Products – An unavoidable impact of watershed restoration would be a reduction in the number of mature pinyon pines found in the decision area. (Pinyon pine would not be removed under Alternative D.) This reduction would not adversely affect fuelwood and pinyon pine nut harvesting, as supply would continue to exceed demand. Other plants also would be affected by vegetation treatment, which could adversely affect their use until restoration is completed.

Geology and Mineral Extraction – An unavoidable effect of closing areas to mineral leasing, entry, or sales, is the requirement to forego the development of potential mineral resources in these areas and the societal benefits that would be derived from these minerals.

Watershed Management – Livestock grazing, fire management, off-highway vehicle use, and mineral exploration and development activities could slow watershed restoration success.

Fire Management – Off-highway vehicle use, other forms of recreation, and mineral exploration and development activities would continue to be potential causes of wildland fires.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

4.31 Relationship Between the Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

Not all of the management actions proposed for the decision area have implications for short-term uses and long-term productivity. Short-term is defined as 10 years beginning with the signing of the Record of Decision. Long-term is defined as greater than 10 years beginning at the same point. Managed short-term uses of renewable resources, such as forage use for livestock grazing and forest/woodland products use for commercial and personal needs, would not cause reductions in long-term productivity. Management would be expected to maintain and enhance long-term productivity. Use of nonrenewable resources, such as oil, gas, and other mineral development, would eliminate the availability of these resources for future generations. Thus, by their extractive nature, these short-term uses would not maintain long-term productivity.

The component of the Ely RMP/EIS that would have the greatest influence on the maintenance and enhancement of long-term productivity is the restoration of watersheds through implementation of the watershed analysis process. The alternatives analyzed in the RMP/EIS would implement restoration activities on individual watersheds, targeting different numbers of acres to be treated each year. The vegetation treatment component of watershed restoration can be viewed as a short-term use of the environment, since the various tools and techniques that may be used (such as wildland fire use, herbicide treatment, or mechanical treatment) would disturb the communities being treated. However in the long term, the goal of the treatments is to restore the communities to a more resilient and productive state through the removal of over-mature or invasive-dominated vegetation. The restoration process could take 50 to 100 years, depending on the vegetation community being treated and climatic factors following treatment. Thus, restoration activities could reduce productivity in the short term but would ultimately enhance productivity in the long term.

4.32 Irreversible or Irretrievable Commitments of Resources

The management actions proposed for the decision area could result in either the irreversible or irretrievable commitment of certain resources. Irreversible is a term that describes the loss of future options. It applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil quality, that are renewable only over very long periods of time. Irretrievable is a term that applies to the loss of production, harvest, or use of natural resources. For example, livestock forage production from an area is lost while an area is undergoing landscape restoration. The production lost is irretrievable, but the action is not irreversible. Once the watershed is restored, forage production would increase and livestock grazing could resume, potentially at a higher rate. Irreversible and irretrievable commitments for the Proposed RMP are summarized on **Table 4.32-1**.

Table 4.32-1
Irreversible and Irretrievable Commitment of Resources for the Proposed RMP

Resource Program	Irreversible Commitments	Irretrievable Commitments	Explanation
Physical and Biological Resources			
Air Quality	No	No	No decisions that would permanently degrade air quality are proposed.
Water Resources	No	No	Water quality effects that occur during watershed restoration would be reversible.
Soil Resources	Yes	No	Loss of soils due to erosion during watershed restoration would be irreversible.
Vegetation	Yes	Yes	Changes in vegetation communities from wildland fire, cheatgrass invasion, or watershed restoration activities may not be reversible or may be reversible only after many decades. Vegetation production lost to drought, wildland fire, and invasive plants and resources committed for vegetation treatment would be irretrievable.
Fish and Wildlife			
Aquatic Habitat and Fisheries	No	No	No decisions that would permanently degrade aquatic habitat are proposed. Water quality effects that occur during watershed restoration would be reversible.
Wildlife	Yes	Yes	Changes in wildlife habitat from wildland fire, invasive plants, or watershed restoration activities may not be reversible or may be reversible only after many decades. Big game production lost to wildland fire and habitat changes would be irretrievable.
Special Status Species			
Plant Species	Yes	No	Effects to special status plants from authorized and unauthorized activities, wildland fire, invasive plants, or watershed restoration activities may not be reversible.
Aquatic Species	No	No	No decisions that would permanently degrade aquatic habitat are proposed. Water quality effects that occur during watershed restoration would be reversible.
Wildlife Species	Yes	No	Effects to special status animals from authorized and unauthorized activities, wildland fire, invasive plants, or watershed restoration activities may not be reversible.

Table 4.32-1 (Continued)

Resource Program	Irreversible Commitments	Irretrievable Commitments	Explanation
Wild Horses	No	No	No decisions that would preclude the management of wild horse herds at the appropriate management level are proposed.
Cultural Resources	Yes	No	Authorized mitigation of cultural sites prior to disturbance and unauthorized collecting and vandalism would result in an irreversible commitment of the resource.
Paleontological Resources	Yes	No	Authorized and unauthorized collecting of fossils would result in an irreversible commitment of the resource.
Visual Resources	No	Yes	The opportunities to view undisturbed settings that are lost during watershed restoration activities would be irretrievable.
Resource Uses			
Lands and Realty	Yes	No	As a practical matter, disposal of public lands would be irreversible. Authorized activities that make lands unsuitable for disposal would be minimal.
Renewable Energy	No	No	No decisions that would limit the development of renewable energy are proposed.
Travel Management and Off-highway Vehicle Use	Yes	No	Scarring of the landscape that results from authorized and unauthorized off-highway vehicle use can be irreversible.
Recreation	No	Yes	Recreation opportunities that are lost during watershed restoration activities would be irretrievable.
Livestock Grazing	Yes	Yes	Invasion of rangelands by cheatgrass may be irreversible. Loss of forage production during watershed restoration would be irretrievable.
Forest/Woodland and Other Plant Products	No	Yes	Loss of forest/woodland and other plant products during watershed restoration would be irretrievable.
Geology and Mineral Extraction			
Leasable Minerals	Yes	Yes	Production of oil and gas would be an irreversible use of the resource. Closing an area to leasing would constitute an irretrievable commitment of the potential resources for the life of the RMP.
Locatable Minerals	Yes	Yes	Mining of locatable minerals (primarily hard-rock) would be an irreversible use of the resource. Withdrawal of an area from mineral entry would constitute an irretrievable commitment of the potential resources for the life of the RMP.

Table 4.32-1 (Continued)

Resource Program	Irreversible Commitments	Irretrievable Commitments	Explanation
Mineral Materials	Yes	Yes	Mining of mineral materials (e.g. sand and gravel) would be an irreversible use of the resource. Denial of the sale of mineral materials would constitute an irretrievable commitment of the resources for the life of the RMP.
Watershed Management	Yes	Yes	Changes in vegetation communities that would result from restoring or not restoring watersheds may not be reversible or may be reversible only after many decades. Resources committed for watershed restoration would be irretrievable.
Fire Management	Yes	Yes	The effects of a high intensity wildland fire would be reversible only after several decades. Resources committed for fire suppression and rehabilitation would be irretrievable.
Noxious and Invasive Weed Management	Yes	Yes	Invasion of vegetation treatment areas by cheatgrass and other noxious or invasive weeds may be irreversible. The resources committed to manage weeds (e.g., fuel, herbicides) would be irretrievable.
Special Designations	No	No	Special designations require no irreversible or irretrievable commitment of resources.
Economic and Social Conditions			
Economic Conditions	Yes	No	Disposal of public land to facilitate economic development of the cities and counties within the planning area would be irreversible.
Social Conditions	No	No	No decisions that would affect social conditions are proposed.
Native American Issues	No	No	No decisions that result in Native American issues are proposed.
Environmental Justice	No	No	No decisions that would affect environmental justice are proposed.
Health and Safety	No	No	No decisions that would degrade health or safety are proposed.

4.33 Energy Requirements and Conservation Potential of Alternatives and Mitigation Measures

Since the majority of the management direction contained in the Ely RMP/EIS is at the land use planning level, no direct energy consumption is involved. Site-specific restoration activities require energy in the form of liquid fuels for vehicles and equipment. The amount of fuel consumed and the potential for conservation would depend on the tools and techniques being applied to a specific watershed, the remoteness of the treatment area, and a number of other factors. The NEPA analysis that is completed for the individual projects would consider the energy requirements and conservation potential of the tools and techniques that are being proposed.

4.34 Natural or Depletable Resource Requirements and Conservation Potential of Alternatives and Mitigation Measures

Since the majority of the management direction contained in the Ely RMP/EIS is at the land use planning level, specific natural or depletable resource requirements are not identified as part of the proposed management actions. Certain programs by their nature utilize renewable and nonrenewable resources, as specified by BLM's multiple use policies. For example, the livestock grazing and wild horse programs utilize forage for domestic livestock and wild horses, while the minerals program develops depletable fluid and non-fluid minerals. However, the alternatives analyzed in this Final EIS, aside from Alternative D, do not differ in any significant way as to their natural or depletable resource utilization or conservation potential. Alternative D includes provisions that would seriously constrain or preclude utilization or development of these same natural and depletable resources.

4.35 Urban Quality, Cultural Resources, and the Design of the Built Environment, Including the Reuse and Conservation Potential of Various Alternatives and Mitigation Measures

The management actions contained in the Proposed RMP and other alternatives would have no effect on urban quality or the built environment. Various historic and cultural resources are found throughout the planning area. One of the three management choices for these resources is their conservation for future generations; the other two are scientific study and public use.

Management of cultural resources in the decision area would vary not only by the alternative chosen, but also by site type and its specific use allocation. Overall, the majority of sites types would be best protected and preserved in place under the Proposed RMP and Alternative A, since most sites would be allocated and managed for Conservation, Scientific, or Public Use, with greater emphasis on Conservation Use. Alternative B is similar to Alternative A for prehistoric sites; however, for all other site types, the emphasis would be to allocate and manage the resources for Public Use. Under Alternative C, a greater number of sites would be discharged from management. Alternative D would manage cultural resources the same as Alternative A, which does not designate use allocations for individual site types.

4.36 Adverse Energy Impact

BLM Instruction Memorandum No. 2002-053 directs that the adverse impacts of decisions on "energy development, production, supply, and/or distribution" be considered. The Approved RMP would provide NEPA coverage for oil and gas leasing in the entire decision area. Adequate analysis under NEPA would ensure that legally defensible leases can be issued and industry can have confidence that challenges to leases can be successfully defended. The decisions that would result from this planning process do not address any specific energy project. Provisions have been made in the Proposed RMP for energy development, production, and distribution. However, closing certain areas to oil, gas, and geothermal leasing has been proposed and has the potential to affect future energy development. Of the total of 6.76 million acres having high potential for oil and gas resources, about 0.29 million acres would be closed to leasing on a discretionary basis under the Proposed RMP. Of the total of 4.67 million acres having medium potential for geothermal resources, about 0.29 million acres would be closed to leasing on a discretionary basis under the Proposed RMP.

Under Alternative A, approximately 60 percent of the decision area would remain unavailable for oil and gas leasing due to the absence of appropriate planning decisions with adequate NEPA analysis. The other alternatives considered in this EIS would have essentially the same area closed to leasing as the Proposed RMP with the exception of Alternative D. Alternative D would close 6.76 million acres of high potential areas to oil and gas leasing and 5.28 million acres of medium potential areas to geothermal leasing.

The reasonably foreseeable development scenarios anticipate 8,400 acres of disturbance for oil and gas exploration and development, and 134 acres of disturbance for geothermal exploration and development. Given that 10.1 million acres would remain open to oil and gas leasing and 10.1 million acres would remain open to geothermal leasing, the proposed closing to leasing of those areas outlined in the Proposed RMP would have a minimal adverse energy impact. When specific proposals are made for energy development, production, supply, and/or distribution, the decisions reached by the Ely Field Office would be reviewed again for adverse energy impact, and the results of that review would be disclosed.

5.0 CONSULTATION AND COORDINATION

5.1 Description of Specific Actions Taken to Consult and Coordinate

From the initiation of work on the RMP/EIS, the Ely Field Office has set consultation and coordination with affected or interested parties as a key priority. There have been seven primary elements of consultation through preparation of the Proposed RMP/Final EIS:

- RMP/EIS scoping process
- Planning bulletin mailings
- RMP/EIS web page
- Informal presentations to interested groups
- Cooperating agency involvement
- Public comment period on the Draft RMP/EIS
- Public meetings on the Draft RMP/EIS

Each of these activities is summarized below.

5.1.1 RMP/EIS Scoping Process

On February 10, 2003, with the publication in the Federal Register of the Notice of Intent (60[27]:6770-6771) to begin the planning process, the BLM Ely Field Office initiated public scoping for issues pertaining to the RMP/EIS. Scoping is the process required in the early stages of developing an EIS to encourage public participation and solicit public input on the scope and significance of the proposed action (Council on Environmental Quality Regulations, Title 40 Code of Federal Regulations Subpart 1501.7). Scoping helps identify issues important to the management of the area and assists in determining the extent of the analysis as well as specific issues to be examined in the planning process.

A 60-day scoping period formally began with the publication of the Notice of Intent in the Federal Register on February 10, 2003, documenting BLM's intent to prepare an EIS. Individuals and organizations were invited to submit comments in writing to the BLM. The notice also published information on the web site address where public scoping meeting dates would be posted and described how the scoping meetings would be publicized in local media before the meetings were to take place.

On February 24, 2003, a Planning Bulletin was sent to over 3,000 homes and organizations. The bulletin again provided information on how the public could obtain information about the upcoming public scoping meetings. Additionally, the bulletin provided an overview of the EIS process and timeline and general information about the RMP/EIS scope and issues to be addressed.

Once scoping meetings were scheduled, public notice of the meetings was published in local newspapers (see **Table 5.1-1**).

Table 5.1-1
List of Paid Newspaper Advertisements Announcing Scoping Meetings

Location	Periodical
Ely, Nevada	Ely Times
Las Vegas, Nevada	Las Vegas Review Journal Las Vegas Sun
Mesquite, Nevada	Desert Valley Times
Pioche, Nevada	Lincoln County Record
Tonopah, Nevada	Tonopah Times-Bonanza
St. George, Utah	The Spectrum

Additional press releases noting meeting dates and providing an explanation of the planning process were sent to numerous media outlets. See **Table 5.1-2** for a list of print and radio media that received various press releases.

Table 5.1-2
List of Media Outlets Receiving Various Press Releases

Location	Print	Radio
Alamo, Nevada	Our Valley Voice	--
Elko, Nevada	Elko Daily Free Press	KELK 1240 AM KLKO 93.7
Ely, Nevada	Ely Times	KCLS 101.7 FM KELY 1230 AM KDSS 92.7 FM
Eureka, Nevada	The Eureka Sentinel	--
Las Vegas, Nevada	Las Vegas Review Journal Las Vegas Sun Los Angeles Times	KNPR
Mesquite, Nevada	Desert Valley Times	--
Pioche, Nevada	Lincoln County Record	--
Reno, Nevada	Associated Press Reno-Gazette Journal	KOH KUNR
Tonopah, Nevada	Tonopah Times-Bonanza	--
Wendover, Nevada	High Desert Advocate	--
Cedar City, Utah	The Spectrum	Star 98 KREC, KSNN, KZHK, KUNF, KDXU, KSUB
St. George, Utah	The Spectrum	--

Six public meetings were held in March/April, 2003. During the meetings, the BLM took notes as the public provided oral comments. Written comments also were received throughout the 60-day comment period, ending April 10, 2003. Both written comments and those received at scoping meetings are in the administrative record. Summaries of these comments are contained in the scoping report for the RMP/EIS. **Table 5.1-3** provides the date, location, and attendance for the six scoping meetings. The Scoping Report has been incorporated into the administrative record and is available for review at the Ely Field Office.

Table 5.1-3
Public Scoping Meeting Locations and Dates

City, State	Location	Date	Attendance
Ely, Nevada	Bristlecone Convention Center	Monday, March 24, 2003	33
Caliente, Nevada	Caliente Elementary School Gymnasium	Tuesday, March 25, 2003	12
Mesquite, Nevada	City Hall	Wednesday, March 26, 2003	10
Las Vegas, Nevada	BLM Las Vegas Field Office	Thursday, March 27, 2003	12
Reno, Nevada	Airport Plaza Hotel	Monday, March 31, 2003	14
Tonopah, Nevada	Tonopah Convention Center	Tuesday, April 1, 2003	4
		Total	85

Written comments also were solicited during the scoping process. Ninety-three (93) letters were received via mail, fax, e-mail, an on-line web comment form, or handed in during the scoping meetings. These letters from individuals and organizations contained 798 unique comments for consideration in the planning process. Comment letters were received primarily from Nevada, but a few comments also were received from the states of Washington, Idaho, Montana, Wyoming, Utah, and Colorado. Comments from Nevada were distributed by county as shown in **Table 5.1-4**.

Table 5.1-4
Comment Letters Received by County in Nevada

County	Letters	Percent
Carson	11	13
Clark	35	42
Elko	2	2
Eureka	1	1
Lincoln	9	11
Nye	1	1
Washoe	17	19
White Pine	8	10
Total	84	100

5.1.2 Planning Bulletins

A total of four planning bulletins have been sent to all parties who had previously indicated their desire to be included on the project mailing list. These bulletins were distributed to a mailing list of over 3,000 interested parties. The planning bulletins provide updates on the project progress, schedule, and information on important milestones and events. Planning Bulletin #1 became available in late February 2003 and Planning Bulletin #2 in late August 2003. These planning bulletins have discussed topics such as:

- The purpose of and schedule for the RMP/EIS;
- The need for ecological restoration within the planning area;
- Opportunities for public involvement;
- Results of the scoping process;

- Nomination of ACECs;
- The involvement of cooperating agencies;
- Progress on developing alternatives to be analyzed in the RMP/EIS;
- Interesting information about the planning area and the activities of the Ely Field Office; and
- Short biographies of team members that are preparing the RMP/EIS.

Planning Bulletin #3, sent in September of 2005, provided a summary of the content of the Draft RMP/EIS, notified the recipients that public meetings on the Draft were scheduled to be held in six locations in Nevada, and outlined the schedule and steps for completion of the Proposed RMP/Final EIS. In addition, a mailer was included to allow the planning bulletin recipients to indicate their preference for receiving a copy of the Proposed RMP/Final EIS.

Planning Bulletin #4 was sent to the public in January of 2007 to update the public on the status of the Proposed RMP/Final EIS. This bulletin informed the readers of planning activities during the past year and the approximate schedule for mailing of the Proposed RMP/Final EIS.

5.1.3 RMP/EIS Web Page

During the preparation of the Draft RMP/EIS, a web page was available to the public to access background information on the planning area as well as information on the ongoing planning and EIS process. In August 2005, it was necessary to close the RMP/EIS web site (as well as most Department of the Interior web sites) in response to a court order that was unrelated to the Ely RMP/EIS.

5.1.4 Informal Presentations

The Ely Field Office has strived to make the EIS process as inclusive as possible. In addition to input from the general public, BLM staff has encouraged participation and collaboration from multiple governmental entities and public organizations. BLM staff has attended numerous meetings in addition to the six official public scoping meetings and provided presentations to organizations and commissions as invited (see **Table 5.1-5**).

Table 5.1-5
Presentations Provided to Organizations

Meeting/Organization	Date	Approximate Attendance
White Pine County Public Land Users Advisory Committee	10/08/02	8
Ely Shoshone Tribe	10/17/02	6
Northeastern Great Basin Resource Advisory Council	12/06/02	20
Nevada Department of Wildlife (Northern Division)	03/06/03	10
Nevada Department of Wildlife (Southern Division)	03/13/03	10
Ely Rotary Club	03/20/03	25
Mojave Southern Resource Advisory Council	04/04/03	20
Mount Wheeler Power Board of Directors	04/08/03	10
Duckwater Shoshone Tribe	04/10/03	5
Tri-County (White Pine, Lincoln, Nye) Meeting	04/30/03	20
White Pine Economic Development Committee	05/07/03	15
Coyotes Motorcycle Club	05/15/03	15
Goshute Tribal Council	09/12/03	10
Mojave Southern Resources Advisory Council	10/17/03	20
Utility Organizations	10/23/03	6
Total		**200**

5.1.5 Cooperating Agencies

Letters inviting various agencies and organizations to participate in the RMP/EIS planning process as formal cooperating agencies were sent to over 30 groups. Cooperating agencies are requested to assist in developing management direction and alternatives, reviewing environmental effects, and selecting a preferred alternative. They also are invited to participate on RMP/EIS-related conference calls and attend RMP/EIS-related meetings. Entities invited to serve as cooperating agencies are as follows:

Federal Government

Forest Service
Army Corps of Engineers
Fish and Wildlife Service
Bureau of Indian Affairs
National Park Service
Department of Defense
Minerals Management Service
Department of Energy
Natural Resource Conservation Service

State Government

Nevada Division of State Lands
Nevada Division of State Parks
Nevada Department of Transportation
University and Community College System of Nevada
Nevada Department of Wildlife
Nevada Department of Agriculture
Nevada Division of Water Resources
Nevada Division of Environmental Protection
Nevada State Historic Preservation Office
Nevada Division of Minerals
Nevada Wildhorse Commission

County Government

White Pine County
Lincoln County
Nye County

Tribal Governments

Duckwater Shoshone
Ely Shoshone
Goshute Shoshone
Moapa Paiute
Paiute Indian Tribe of Utah
Las Vegas Paiute
Yomba Shoshone

Several of the entities agreed to serve as cooperating agencies and had varying levels of involvement in the development of the Draft RMP/EIS. These agencies and groups continued to be involved through preparation of the Proposed RMP/Final EIS. All cooperating agencies were briefed on a regular basis regarding the status of and modifications to the Proposed RMP and Final EIS. Cooperating agencies for the Ely RMP/EIS are as follows:

- Great Basin National Park
- Humboldt-Toiyabe National Forest
- Nellis Air Force Base
- Nevada Department of Transportation
- Nevada Department of Wildlife
- Nevada Division of Minerals
- Nevada State Historic Preservation Office
- Lincoln County
- Nye County
- White Pine County
- Duckwater Shoshone Tribe
- Ely Shoshone Tribe
- Moapa Band of Paiutes
- Yomba Shoshone Tribe

5.1.6 Public Comment on the Draft RMP/EIS

On July 29, 2005, a Notice of Availability was published in the Federal Register (70[145]:43902-43903) announcing the availability of the Draft Ely District RMP/EIS for public review and comment. This began a 120-day comment period that ended on November 28, 2005. The minimum comment period required by BLM regulations for a Draft RMP is 90 days, but the Ely Field Office deemed it more appropriate to specify a 120-day review due to the size and complexity of the Draft RMP/EIS. Although the comment period was not formally extended, BLM did accept, review, and respond to comments received after November 28, 2005.

As described in Section 5.5 of the Draft RMP/EIS, copies of the Draft were sent to over 600 agencies, organizations, and individuals. A total of 650 comment letters on the Draft RMP/EIS were received via U.S. mail and email. These included 81 unique letters and 569 form letters. **Table 5.1-6** summarizes the type of entity that submitted comments. A complete list of commenters can be found in Appendix I.

Table 5.1-6
Comment Letters Received on the Draft RMP/EIS

Federal Agency	6
State Agency	6
Local Government	4
Tribal	1
Non Governmental Organization	20
Business	16
Individual	28
Form Letter	569

Each comment letter was assigned a unique number and then reviewed by BLM.

Comments within the letter were identified and assigned a unique number using the letter number as a prefix. A total of 1667 comments were identified in the set of comment letters received on the Draft RMP/EIS. The next step in the process was for BLM to prepare a response to each comment. Appendix I contains copies of the main body of the comment letters with individual comments contained in each letter bracketed and numbered. Copies of attachments to those letters are not included in Appendix I; these attachments also were reviewed and are included in the Administrative Record. Opposite each comment is BLM's response. Although multiple copies of form letters or form emails may have been received, only one representation of each is reproduced and responded to in Appendix I. However, a list of all commenters that submitted the form letter is included.

Responses to comments take different forms depending on the content of the comment. Some responses answer a comment in total, while others refer the commenter to sections of the RMP/EIS where a topic is discussed. In response to some comments, text, tables, or maps in the Proposed RMP/Final EIS have been revised or expanded. Per Council on Environmental Quality Regulations, BLM has explained why other comments do not warrant further agency response. Such comments may express statements of opinion (including agreement or opposition), may raise topics that are beyond the scope of the Ely RMP/EIS, or may request information that was not deemed necessary to prepare the RMP/EIS.

Verbal comments also were received at the public meetings that were held on the Draft RMP/EIS. These meetings are discussed further in the following section. Transcripts of the meetings are also included in Appendix I, along with responses to the verbal comments that were contained in the statements made at the meetings.

5.1.7 Public Meetings

Public meetings on the Draft RMP/EIS were held in October, 2005 in six locations in Nevada. **Table 5.1-7** provides the meeting locations, dates, and attendance.

Table 5.1-7
Public Meeting Locations, Dates, and Attendance

City, State	Location	Date	Attendance
Ely, Nevada	Bristlecone Convention Center	October 17, 2005	3
Caliente, Nevada	Caliente Elementary School Gymnasium	October 18, 2005	3
Mesquite, Nevada	Mesquite Campus Library	October 19, 2005	8
Las Vegas, Nevada	BLM Las Vegas Field Office	October 20, 2005	18
Reno, Nevada	Airport Plaza Hotel	October 24, 2005	6
Tonopah, Nevada	Tonopah Convention Center	October 25, 2005	0
Total			**38**

After a brief introduction by BLM staff, the meeting attendees were invited to provide oral and written comments on the Draft RMP/EIS. BLM staff took notes and a verbatim account of each meeting was recorded by a court reporter. Appendix I presents the comments received from the public on the Draft RMP/EIS. Transcripts from the public meetings are presented in their entirety in that appendix; comments are bracketed and responses to those comments are provided.

5.2 Tribal Consultation

5.2.1 Tribal Consultation Responsibilities

As a federal agency, the BLM is mandated to consult with American Indian tribes concerning the identification of cultural values, religious beliefs, and traditional practices of American Indian people, as well as other possible environmental and social concerns that may be affected by actions on federal lands. Tribal consultation is the active, affirmative process of: 1) identifying and seeking input from appropriate American Indian governing bodies, community groups, and individuals; and 2) considering their interests as a necessary and integral part of the BLM's decision making process. The aim of consultation is to involve affected American Indian groups in the identification of issues and the definition of the range of acceptable management options.

Tribal consultation includes the identification of places (i.e., physical locations) of cultural value to American Indian groups. Places that may be of cultural value include, but are not limited to, locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world; locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice; ancestral habitation sites; trails; burial sites; and places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes, may be taken. Additionally, some of these locations may be considered sacred to particular American Indian individuals or tribes. Under the auspices of the American Indian Religious Freedom Act of 1978, Executive Order 13007, the Native American Graves Protection and Repatriation Act of 1990, and the National Historic Preservation Act, as amended, the BLM must take into account the effects of land use decisions on these types of locations. See Traditional Cultural Properties under Section 3.9, Cultural Resources, for a summary on tribal consultation conducted as part of the RMP/EIS process.

The BLM works in cooperation with American Indian tribes to coordinate and consult before making decisions or approving actions that could result in changes in land use, physical changes to lands or resources, changes in access, or alienation of lands. The Federal Land Policy and Management Act and the National Historic Preservation Act of 1966, as amended, require coordination with tribes in preparing and maintaining inventories of the public lands and determining their various resources and other values, developing and maintaining long-range plans providing for the use of the public lands, and managing the public lands. Federal programs are required to be carried out in a manner sensitive to American Indian concerns and tribal government planning and resource management programs.

In compliance with the federal mandates identified above, a number of Western Shoshone, Goshute, and Southern Paiute reservations, colonies, organizations, and individuals were contacted for the Ely RMP/EIS. The Western Shoshone included the Te-Moak Tribes, Battle Mountain Band, Elko Band, South Fork Band, Wells Band, Duckwater Shoshone Tribe, Ely Shoshone Tribe, Timbisha Shoshone Tribe, Yomba Shoshone Tribe, Duck Valley Sho-Pai Tribes, the Western Shoshone Historic Preservation Society, Nevada Indian Commission, Intertribal Council of Nevada, and Western Shoshone Defense Project. Included for the Gosiute were the Goshute Tribe (Ibapah) and Skull Valley Band of Gosiute. The Southern Paiute included the Paiute Tribe of Utah, Las Vegas Paiute Tribe, Moapa Paiute Tribe, the Colorado Indian Tribes, the Chemehuevi Tribe, and individuals residing in Eagle Valley and Caliente.

The coordination and consultation process was initiated with mail and telephone correspondence. Letters were posted describing the RMP/EIS process and soliciting input from the tribes and individuals. The letters were followed by telephone calls to discuss the RMP/EIS, potential cultural concerns and sites, individuals knowledgeable about the area, and possible meetings. Meetings and interviews were then scheduled and held over a 2-week period. Participants included the Ely Shoshone, Duckwater Shoshone, Yomba Shoshone, Battle Mountain Shoshone, Ibapah Goshute, Paiute Tribe of Utah, Moapa Paiute, and individuals residing in Caliente and Eagle Valley. In the meetings and interviews, the RMP/EIS was described and discussions were held regarding places of importance to the tribes. Questions were asked about tribal concerns for these places, and the nature and importance of the overall cultural landscapes. Details of the correspondence and meetings with the tribes and individuals are detailed in a separate, confidential report.

5.3 Agencies Contacted During Preparation of the Ely RMP/EIS

Bureau of Land Management, Arizona Strip Field Office, Utah
Bureau of Land Management, Battle Mountain Field Office
Bureau of Land Management, Cedar City Field Office, Utah
Bureau of Land Management, Elko Field Office
Bureau of Land Management, Fillmore Field Office, Utah
Bureau of Land Management, Las Vegas Field Office
Bureau of Land Management, Salt Lake Field Office, Utah
Bureau of Land Management Sciences Center
Bureau of Land Management, St. George Field Office, Utah
Bureau of Land Management, Tonopah Field Station Office
Lincoln County Planning Office
Nevada Division of Environmental Protection
Nevada Division of Minerals
Nevada Department of Wildlife
Nevada Natural Heritage Program
Ruby Lake National Wildlife Refuge
U.S. Army Corps of Engineers
U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services
U.S. Department of Energy, National Renewable Energy Laboratory
U.S. Fish and Wildlife Service
U.S. Geological Survey

5.4 Plan Distribution

Since initial scoping, BLM has maintained a mailing list of individuals, businesses, special interest groups, and federal, state, Tribal, and local government representatives interested in development of the Ely RMP. In an effort to reduce printing costs, BLM has continued to update the RMP/EIS mailing list by removing those no longer interested in the process and addresses from which mailings have been returned.

Copies of the Proposed RMP/Final EIS also are available for public inspection at the following locations:

BLM Battle Mountain Field Office
BLM Billings Field Office
BLM Caliente Field Station
BLM Carson City Field Office
BLM Denver Field Office
BLM Elko Field Office
BLM Ely Field Office
BLM Las Cruces Field Office
BLM Las Vegas Field Office
Great Basin National Park
U.S. Forest Service, Ely Ranger District
Austin Branch Library
Battle Mountain Branch Library
BLM Library
Caliente Branch Library
Colorado State University Library
Goldfield Public Library
Government Publications Library
Lincoln County Courthouse
Lincoln County Public Library
Nye County Courthouse
Nye County Public Library
Round Mountain Public Library
Tonopah Library District
University of Nevada Libraries
Washoe County Library
White Pine County Courthouse
White Pine County Public Library

The Proposed RMP/Final EIS also is available electronically at the Ely RMP/EIS website: http://www.blm.gov/nv/st/en/fo/ely_field_office.html.

Concurrent with the distribution of the Proposed RMP/Final EIS, a Notice of Availability was published by the Environmental Protection Agency in the Federal Register, which marks the beginning of the 30-day protest period. BLM also published a Notice of Availability in the Federal Register announcing the availability of the Proposed RMP/Final EIS for public review and comment.

5.5 List of Agencies, Organizations, and Persons to whom Copies of this Statement are Sent

The Proposed RMP/Final EIS has been mailed to agencies, organizations, and individuals in hard copy, CD-ROM, or Summary format per their requested media type. All persons who commented on the Draft RMP/EIS but did not request a specific media type of the Proposed RMP/Final EIS were sent a CD-ROM containing the entire document, plus a mailer they could use to request a printed Summary or hard copy. Hard copies of the Proposed RMP/Final EIS also have been distributed to agencies and Tribal governments as required by regulation or policy.

Federal Agencies

- Department of Agriculture
  - Animal and Plant Inspection Service, Portland, Oregon
  - Fish and Wildlife Service
    - Nevada Fish and Wildlife Office – Reno, Nevada
    - Ruby Lake National Wildlife Refuge – Ruby Valley, Nevada
  - Forest Service
    - Ely Ranger District – Ely, Nevada
    - Humboldt-Toiyabe National Forest – Reno, Nevada
    - Rocky Mountain Research Station – Reno, Nevada
  - Natural Resources Conservation Service
    - Caliente Service Center – Caliente, Nevada
    - Ely Service Center – Ely, Nevada
- Department of Defense
  - Department of the Air Force
    - Air Force Regional Environmental Office, Region 9 – San Francisco, California
    - Bolling Air Force Base – Washington, D.C.
    - Nellis Air Force Base – Nevada
    - Office of the Deputy A/S of the U.S. Air Force – Washington, D.C.
  - Department of the Army
    - Army Corps of Engineers, North Western Division – Portland, Oregon
    - Army Corps of Engineers, South Pacific Division – San Francisco, California
  - Department of the Navy
    - Naval Air Station – Fallon, Nevada
- Department of Energy
  - Office of Environmental Compliance (EH-23) – Washington, D.C.
  - Office of National Transportation
    - Office of Civilian Radioactive Waste Management – Washington, D.C.
- Department of the Interior
  - Agricultural Research Service – Reno, Nevada
  - Bureau of Indian Affairs
    - Eastern Nevada Agency – Elko, Nevada
    - Western Nevada Agency – Carson City, Nevada
    - Western Region Office – Phoenix, Arizona
  - Bureau of Land Management
    - Battle Mountain Field Office – Battle Mountain, Nevada
    - Billings Field Office – Billings, Montana
    - Carson City Field Office – Carson City, Nevada
    - Denver Federal Center – Denver, Colorado
    - Elko Field Office – Elko, Nevada
    - Las Cruces Field Office – Las Cruces, New Mexico

- Las Vegas Field Office – Las Vegas, Nevada
- Nevada State Office – Reno, Nevada
- Washington Office – Washington, D.C.

- U.S. Fish And Wildlife Service
  - Desert National Wildlife Refuge Complex – Las Vegas, Nevada
  - Headquarters (Region 9) – Washington, D.C.
  - Nevada Fish and Wildlife Office – Las Vegas, Nevada
  - Nevada Fish and Wildlife Office – Reno, Nevada
  - Pahranagat National Wildlife Refuge – Alamo, Nevada
- U.S. Geological Survey
  - National Center – Reston, Virginia
  - Western Mineral Resources Reno Office – Reno, Nevada
- Minerals Management Service
  - Offshore Environmental Assessment Program – Herndon, Virginia
- National Park Service
  - Denver Service Center – Denver, Colorado
  - Division of Environmental Compliance – Washington, D.C.
  - Great Basin National Park – Baker, Nevada
- Natural Resources Library – Washington, D.C.
- Office of Environmental Policy and Compliance – Washington, D.C.
- Office of Public Affairs – Washington, D.C.
- Resource Advisory Council
  - Mojave/Southern Great Basin – Las Vegas, Nevada
  - Northeast Great Basin – Carson City, Las Vegas, and Silver City, Nevada
  - Northwest – Virginia City, Nevada

U.S. Environmental Protection Agency
- Office of Federal Activities, Region IX – San Francisco, California
- Office of Federal Activities – Washington, D.C.

State Agencies

Commission on Economic Development – Carson City, Nevada

Commission on Mineral Resources
- Division of Minerals – Carson City, Nevada

Department of Administration
- Nevada State Clearinghouse – Carson City, Nevada

Department of Agriculture – Reno, Nevada

Department of Conservation and Natural Resources
- Commission for the Preservation of Wild Horses – Carson City, Nevada
- Division of Environmental Protection – Carson City, Nevada
  - Bureau of Water Pollution Control – Carson City, Nevada
- Division of Forestry, Las Vegas – Ely and Wells, Nevada
- Division of State Lands – Carson City, Nevada
- Division of State Parks
  - Cathedral George State Park – Panaca, Nevada
  - Lake Tahoe – Nevada State Park, Incline Village, Nevada
  - Main Office – Carson City, Nevada
- Division of Water Resources – Carson City, Nevada

Department of Transportation
- Carson City Headquarters – Carson City, Nevada
- Las Vegas Office – Las Vegas, Nevada

Department of Wildlife
  Baker Office – Baker, Nevada
  Eastern Region Office – Elko, Nevada
  Headquarters/Western Region – Reno, Nevada
  Pioche Office – Pioche, Nevada
  Southern Region Office – Las Vegas, Nevada
Division of Child and Family Services, Caliente Youth Center – Caliente, Nevada
Nevada Legislative Committee on Public Lands – Carson City, Nevada
Nevada Historical Society – Reno, Nevada
Nevada State Office of Energy – Carson City, Nevada
Nevada System of Higher Education
  Desert Research Institute – Reno, Nevada
  University and Community College System of Nevada – Las Vegas, Nevada
  University of Nevada Reno – Reno, Nevada
    Cooperative Extension Administrative Office – Las Vegas, Nevada
    Department of Biotechnology – Reno, Nevada
    Lincoln County Cooperative Extension – Caliente, Nevada
    Bureau of Mines and Geology – Reno, Nevada
    White Pine County Cooperative Extension – Ely, Nevada
Office of the Governor
  Nevada Agency for Nuclear Projects – Carson City, Nevada
State Historic Preservation Office – Carson City, Nevada

Counties
Clark County
  Department of Comprehensive Planning – Las Vegas, Nevada
Eureka County
  Natural Resources Department – Eureka, Nevada
  Eureka County Annex – Eureka, Nevada
  Board of Commissioners – Eureka, Nevada
Lander County
  Lander County Austin Office – Austin, Nevada
  Public Land Use Advisory Committee – Austin, Nevada
Lincoln County
  Planning and Public Lands Commission – Pioche, Nevada
  Board of Commissioners – Pioche, Nevada
  Wildlife Advisory Board – Pioche, Nevada
  Conservation District – Caliente, Nevada
Nye County
  Department of Natural Resources – Tonopah, Nevada
  Road Department – Tonopah, Nevada
  Nuclear Waste Project Office – Tonopah, Nevada
  County Commissioners – Tonopah, Nevada
  Road Department – Pahrump, Nevada
White Pine County
  Chamber of Commerce – Ely, Nevada
  Wildlife Advisory Board – Ely, Nevada
  County Commissioners – Ely, Nevada
  County Engineer – Ely, Nevada
  Historical And Archaeological Society – Ely, Nevada
  Public Land Use Advisory Committee – McGill, Nevada

Municipalities
Carson Colony Recreation Department – Carson City, Nevada
Ely City Council – Ely, Nevada
Carson City Planning Division – Carson City, Nevada

Media
Anvil Magazine – Georgetown, California
Arizona Capital Times – Phoenix, Arizona
Equestrian Connection – Citrus Heights, California
KBZB Radio – Pioche, Nevada
KOZZ Radio – Reno, Nevada
KTVN Channel 2 CBS – Reno, Nevada
KVBC Channel 3 – Las Vegas, Nevada
Laughlin Gambler – Laughlin, Nevada
Sans Sports Magazine – Costa Mesa, California
Western Outdoors – San Clemente, California
Working Moms and Dads Magazine – Tucson, Arizona

Libraries
Washoe County Library – Reno, Nevada
Austin Branch Library – Austin, Nevada
Caliente Branch Library – Caliente, Nevada
White Pine County Library – Ely, Nevada
Library of Congress Exchange and Gift Division – Washington, D.C.
Government Publications Department – Riverside, California
Alamo Branch Library – Alamo, Nevada
Battle Mountain Branch Library – Battle Mountain, Nevada
Lincoln County Library – Pioche, Nevada
Goldfield Public Library – Goldfield, Nevada
Colorado State University Library – Fort Collins, Colorado
Round Mountain Public Library – Round Mountain, Nevada
White Pine County Library – Ely, Nevada
University of Nevada Libraries – Reno, Nevada
Cataloging/Library Systems, BLM Library – Denver, Colorado
Tonopah Library District – Tonopah, Nevada

Elected Officials
Office of Senator John Ensign – Reno, Nevada
Office of Senator Harry Reid – Reno, Nevada
Office of Senator Bruce Thompson – Reno, Nevada
Brent Eldridge, White Pine County Commissioner – Ely, Nevada
Jim Gibbons, Governor, State of Nevada – Carson City, Nevada
Corrine Hogan, County Clerk, Lincoln County Clerk – Pioche, Nevada
Ronda Hornbeck, Chair, Lincoln County Board of Commissioners – Pioche, Nevada
John W. Marvel, Nevada State Assembly – Battle Mountain, Nevada
Kevin Phillips, Mayor, City of Caliente – Caliente, Nevada
Tommy (George T.) Rowe, Commissioner, Lincoln County Board of Commissioners – Pioche, Nevada

Tribal Organizations
Duckwater Shoshone Tribe – Duckwater, Nevada
Ely Shoshone Tribe – Ely, Nevada

Moapa Band of Paiutes – Moapa, Nevada
Yomba Shoshone Tribe – Austin, Nevada

Organizations

American Wildlands – Reno, Nevada
Animal Welfare Institute – Louisville, Kentucky
Animal Welfare Institute – Washington, D.C.
Arthur Carhart National Wilderness Training Center – Missoula, Montana
Baker Area Citizens Advisory Board – Baker, Nevada
BlueRibbon Coalition – Pocatello, Idaho
C/O The Klamath Forest Alliance – Orleans, California
Carson Valley Arabian Horse Association – Gardnerville, Nevada
Center For Biological Diversity
    San Francisco Bay Area Office – San Francisco, California
    Tucson, Arizona
Dia Art Foundation – New York, New York
Eastern Nevada Landscape Coalition
    Ely, Nevada
    Reno, Nevada
    Verdi, Nevada
Fraternity of the Desert Bighorn – Las Vegas, Nevada
Friends of Nevada Wilderness
    Las Vegas, Nevada
    Reno, Nevada
Great Basin Bird Observatory – Carson City, Nevada
Mt. Wilson Community Fire Safe Chapter – Pioche, Nevada
National Mustang Association, Inc. – Cedar City, Utah
National Pony Express Association – Silver Springs, Nevada
National Wild Turkey Federation – Arcata, California
Natural Resource Defense Council – San Francisco, California
NE Nevada Stewardship Group – Elko, Nevada
Nevada Archaeological Association – Las Vegas, Nevada
Nevada Miners and Prospectors – Reno, Nevada
Nevada Wildlife Federation
    Loyalton, California
    Reno, Nevada
NRF – Reno, Nevada
NUFWashington – Logandale, Nevada
Nevada Important Bird Areas Program – Carson City, Nevada
Partners in Conservation – Moapa, Nevada
Partnership for the West – Austin, Nevada
Public Lands Foundation – Arlington, Virginia
Red Rocks Audubon Society – Las Vegas, Nevada
Rocky Mountain Elk Foundation
    Ely, Nevada
    Mt. Shasta, California
Sierra Club – Reno, Nevada
Southern Nevada Baptist Association – Las Vegas, Nevada
Southern Nevada Group of the Sierra Club – Las Vegas, Nevada
The Long Now Foundation – San Francisco, California

The Nature Conservancy
  Ely, Nevada
  Reno, Nevada
The Toiyabe Chapter of the Sierra Club
  GBG Conservation Committee – Reno, Nevada
  Public Lands Committee – Reno, Nevada
The Wilderness Society, BLM Action Center – Denver, Colorado
  BLM Action Center – Denver, Colorado
  Intermountain West BLM Campaign – Denver, Colorado
Vegas Valley 4 Wheelers – Las Vegas, Nevada
Western Lands Project – Seattle, Washington
Western Watersheds Project
  Boise, Idaho
  Hailey, Idaho
Wild Horse Spirit – Carson City, Nevada
Wild Utah Project – Salt Lake City, Utah
Wildlife Management Institute
  Fort Collins, Colorado
  Washington, D.C.
WP 4-Wheelers – Ely, Nevada

Industries/Businesses
7H Ranch LLC – Ruby Valley, Nevada
ABC Registry – Ely, Nevada
Ageiss Environmental – Denver, Colorado
Alpine, Inc. – Edmond, Oklahoma
American Discovery Trail – Carson City, Nevada
Art Images – Sparks, Nevada
Basin Research Associates – San Leandro, California
Best in the Desert Racing – Las Vegas, Nevada
Bighorn Archaeological Consultants – Santa Clara, Utah
Biowest Inc. – Logan, Utah
Bjork Lindley Little PC – Denver, Colorado
Blue Diamond Oil Corp. – Ely, Nevada
Board of Sheep Commissioners – Spring Creek, Nevada
Butler Holdings LLC – Park City, Utah
California Federal Mineralogical Society – Reno, Nevada
Carlson And Associates – Las Vegas, Nevada
Carter Cattle Company Carter Agri Systems – Lund, Nevada
Castle Area Real Estate – Kaysville, Utah
Centerra (U.S.) Inc. – Reno, Nevada
Cfms and Nevada Rock Homes – Reno, Nevada
Cg Squared – Reno, Nevada
CH2MHill – Sacramento, California
Chemetall Foote Corp. – Silver Peak, Nevada
CL Cattle Company LLC – Ely, Nevada
Clipper Wind Power – Carpinteria, California
Colorado Getchell Mine – Golconda, Nevada
Coeur Dalene Mines Corp. – Lovelock, Nevada
Consulting Geologist – St. George, Utah
Cottonwood Ranch – Wells, Nevada

Couple's MC/ Mlan – Ely, Nevada
Cove Meadows Ranch – McGill, Nevada
D4 Ranch – Alamo, Nevada
DM Ranch – Wells, Nevada
Donald Hibbard – Sherman Oaks, California
Double U Livestock LLC – Ely, Nevada
Dunes and Trails – Las Vegas, Nevada
Eagle Exploration Inc. – Reno, Nevada
El Tejon Cattle Co. – Bakersfield, California
Ely Airport Yelland Field – Ely, Nevada
EMPS Environmental Management – San Francisco, California
ENSR – Fort Collins, Colorado
Entrix – Sacramento, California
Far Western Anthropological Research Group, Inc. – Las Vegas, Nevada
Farnsworth Farms – Enterprise, Utah
Filippini Ranching Co. – Battle Mountain, Nevada
Firstmiss Gold Incorporated – Golconda, Nevada
Fish Creek Ranch LLC – Eureka, Nevada
Florida Canyon Mining Incorporated – Imlay, Nevada
Frontier Exploration Co. – Salt Lake City, Utah
Garrison Investment Fund, Inc. – Las Vegas, Nevada
GBHAP – East Ely, Nevada
Getchell Gold Corp. – Golconda, Nevada
Gnomon Inc. – Carson City, Nevada
Goods for the Woods – Licking, Missouri
Heklet Association – Carson City, Nevada
HHH Hunting – Levan, Utah
HTT Resource Advisors – Elko, Nevada
Idaho Power – Boise, Idaho
IFC International – San Francisco, California
Indian Creek Ranch – Winnemucca, Nevada
Industrial Mineral Developments, Inc. – Las Vegas, Nevada
Interstate Dist. Inc. – Eureka, Nevada
Intertech Services Corp. – Carson City, Nevada
JBR Environmental Consultants, Inc. – Reno, Nevada
JDL Construction – McGill, Nevada
John Uhalde and Company – Ely, Nevada
KDJ and Associates – North Las Vegas, Nevada
KOA of Ely – Ely, Nevada
Larralde Sheep – Bakersfield, California
Las Vegas Riders – Pahrump, Nevada
Lincoln County Power District – Pioche, Nevada
Lincoln County Realty – Caliente, Nevada
LS Power Development LLC – St. Louis, Missouri
Minad Inc. – Winnemucca, Nevada
MJ Bright Minerals Development Inc. – Lakewood, Colorado
Motorcycle Racing Association of Nevada – Las Vegas, Nevada
Mt. Wheeler Power Co – Ely, Nevada
Munger Oil Information Service Inc. – Los Angeles, California
Nevada Bell – Reno, Nevada
Nevada Cement Company – Fernley, Nevada

Nevada Farm Bureau – Lund, Nevada
Nevada Land and Resource Co. LLC – Carson City, Nevada
Nevada Mining Association – Reno, Nevada
Nevada Petroleum Society – Sherman Oaks, California
Nevada Power/Sierra Pacific Power – Las Vegas, Nevada
Nevada United 4 Wheel Drive Association – Las Vegas, Nevada
Nevada Woolgrowers Association – Eureka, Nevada
Newmont Mining Corp. – Reno, Nevada
Newmont-Twin Creeks – Golconda, Nevada
Off Road Com – Aztec, New Mexico
Off-Road Business Association – Pocatello, Idaho
Osceola Placer Mine – Ely, Nevada
Otis Bay Ecological Consultants – Reno, Nevada
Oxidor Corporation – Plano, Texas
Pacific Primative Rendezvous – Silver City, Nevada
Pescio Brothers AR Pescio And Sons – McGill, Nevada
P-III Associates, Inc. – Salt Lake City, Utah
Placer Dome and Bald Mt. Mine – Elko, Nevada
Placerdome America/Bald Mountain Mine – Crescent Valley, Nevada
Pleasant Valley Enterprises – Trout Creek, Utah
Public Resource Associates – Reno, Nevada
Public Works Journal – Addison, Illinois
Purple Sage O and G Service – Pioche, Nevada
Range Consultant – Fallon, Nevada
Resource Concepts Inc. – Carson City, Nevada
Robinson Nevada Mining Company – Ruth, Nevada
Round Mountain Gold Corp. – Round Mountain, Nevada
Sand Springs Ranch – Alamo, Nevada
Science Applications – Boise, Idaho
Sierra Pacific Power Company – Reno, Nevada
Sleeplate Ranch – Hiko, Nevada
SNOregonE – Las Vegas, Nevada
Southern Nevada Off-Road Enterprises – Henderson, Nevada
Southern Nevada Water Authority – Las Vegas, Nevada
SPPC – Reno, Nevada
SPPColorado – Reno, Nevada
Stage Stop Ranch – Gabbs, Nevada
Steptoe Ranch – McGill, Nevada
Stonegate Resources, LLC – Park City, Utah
T Bench Ranch – Ely, Nevada
TC Mine – Golconda, Nevada
Tetra Tech, Inc. – Boulder, Colorado
The Exafs Company – Pioche, Nevada
Tillie's/Wright Country Cabins/TKO Outfitters – Pioche, Nevada
Timberline Outfitters Guide Service – McGill, Nevada
Trac-On – Las Vegas, Nevada
Turner and Irlbeck Ranch – Ely, Nevada
URS Corporation – Las Vegas, Nevada
URS Group – Boise, Idaho
Vanderbilt Minerals Corporation – Pahrump, Nevada
Viceroy Gold Corp. – Searchlight, Nevada

Virgin Valley Water District – Mesquite, Nevada
Whipple Cattle Company – Hiko, Nevada
White River Ranch LLC – North Las Vegas, Nevada
Wingfield Nevada Group – Sparks, Nevada
Winn Exploration Co, Inc – Corpus Christi, Texas
Wyman Engineering Consultants – Boulder City, Nevada
Yelland Ranch – Ely, Nevada

Individuals
A. E. – La Mesa, California
Cory Abdo – North Hollywood, California
Sally Abrams – San Francisco, California
Theresa Acerro – Chula Vista, California
Beverly Ackerman – Santa Rosa, California
Richard L. Acton – Reno, Nevada
David Adams – Burlingame, California
Laurie Adams – Boise, Idaho
Marco Aguilera – Mammoth Lakes, California
Ray Alcorn – Mesquite, Nevada
George and Frances Alderson – Baltimore, Maryland
Arthur and Brenda Alexander – Ely, Nevada
Holly Allen – Stateline, Nevada
Tammy Allen – San Bruno, California
Eric Althoff – Altadena, California
Rachael Alvarez-Jett – Torrance, California
Dale Anania – Berkeley, California
Kenny A. Anderson – Las Vegas, Nevada
KAI Anderson – Washington, D.C.
Corina Anderson – Bakersfield, California
Darla Anelli – San Jose, California
Sandra Angelos – San Francisco, California
S. Anpu – Salt Lake City, Utah
Rianna Ardelean – Reno, Nevada
Julie Arfsten – Petaluma, California
Amin Arikat – Hercules, California
C. Jayne Armstrong – San Jose, California
Robert and Sally Arroyo – Covina, California
Susan Ashton – San Jose, California
Chris Ashton – La Mesa, California
Christina Babst – West Hollywood, California
John Bader – Wilton, California
Anna Bainter – Jamul, California
David Baker – Baker, Nevada
Betty Baker – Ely, Nevada
Craig and Gretchen Baker – Baker, Nevada
Nikolai Balah – Glendale, California
Anne Balderston – Corona Del Mar, California
Jeff Ball – Sacramento, California
Jennifer Banoczy – Los Angeles, California
Lynne Banta – Los Angeles, California
Lynn Barker – Los Angeles, California

Terry Anne Barman – Laguna Beach, California
Tim Barrington – Sunnyvale, California
Margorie L. Barton – North Las Vegas, Nevada
Kim Bauer – Lancaster, California
Wendy C. Bauer – San Francisco, California
S. Baughman – Ely, Nevada
Dennis Beall – Cazadero, California
Kate Bean – El Cerrito, California
Kathleen Beaulieu – Soquel, California
Karen Becker – Ventura, California
Gary Beckman – Las Vegas, Nevada
Russell Beebe – Sunnyvale, California
Ray Bell – Bakersfield, California
Danielle Belliveau – Alpine, California
Elisha Belmont – Westminster, California
Michael Benedetti – Rohnert Park, California
Melissa Benham – San Jose, California
Walter Benoit – Reno, Nevada
Sheila Benson – Raymond, California
Gary Benthin – Pasadena, California
Larry Berg – Reno, Nevada
George Berges – New York, New York
Judy Bergman – San Diego, California
Vicki Bergstrom – Julian, California
Shelley Berkley – Las Vegas, Nevada
Diane Berliner – Los Angeles, California
Lila and Irv Berman – Santa Monica, California
Nancy Berman – Berkeley, California
Sheryl Bernstein – Van Nuys, California
Joanna Bettmann – Torrey, Utah
Theodore Beutel – Eureka, Nevada
Russell Bezette – La Verkin, Utah
Larry Bibayoff – Sacramento, California
Bonnie Biddison – Oak Park, California
James Biser – Provo, Utah
Sandra Bitton – Elko, Nevada
Stephen Black – Bakersfield, California
Doyle Blades – Ruth, Nevada
Jill Blaisdell – La Canada, California
Russell Blalack – Cupertino, California
Keith Blunt – Roseville, California
Sarah Bly – Ashland, Oregon
Karen Boeger – Reno, Nevada
Terry Bolander – Las Vegas, Nevada
Pam Bolas – McGill, Nevada
Charlotte Bolinger – Nevada City, California
Diane Bolman – Novato, California
Hyla Bolsta – Fort Bragg, California
Howard Booth – Boulder City, Nevada
Michael Bordenave – Fresno, California
Annette Bork – Irvine, California

Tasha Boucher – Los Angeles, California
Fred Boutin – Tuolumne, California
Ashley Brack – Escondido, California
Sarah Brady – Los Angeles, California
Lee Brainerd – Altadena, California
Lynn Braun – Encinitas, California
Christine Brazis – San Francisco, California
Joan Breiding – San Francisco, California
John Breitrick – Ely, Nevada
Claire Brenner – San Diego, California
Aslan Brooke – Los Angeles, California
Elaine Brooks – Reno, Nevada
Robin Brooks – Oakland, California
Bob Brown – Ely, Nevada
Joel Brown – San Diego, California
Irene Brown – Los Altos, California
Kathy Brown – Pahrump, Nevada
Phillip Buck – Caliente, Nevada
Debbie Buckheim – Atascadero, California
Robert Buckner – Sierra Madre, California
George Buettner – Pioche, Nevada
Linda Bullen – Las Vegas, Nevada
Eleanor Burian-Mohr – Los Angeles, California
Steven Burr – Providence, Utah
Aimon Bustardo – Topanga, California
Richard Bustos – Ely, Nevada
Patrick Caldwell – Genoa, Nevada
Stanley Califf – Orange, California
Tom Camara – Mill Valley, California
Norma Campbell – Campbell, California
Jim Campe – Pilot Hill, California
Frank Cannon – South Lake Tahoe, California
M. Canter – Tiburon, California
Karen Cappa – Rohnert Park, California
Sylvia Cardell – Hydesville, California
Aglaia Cardona – Capitola, California
Angel Cardoza – Mission Viejo, California
Ron Carey – Battle Mountain, Nevada
Thomas Carlino – San Jose, California
Cathleen Carlson – Torrance, California
John Carpenter – Elko, Nevada
Gaile and Bob Carr – Mount Shasta, California
Colleen Carr – Big Oak Flat, California
Laurie Carr – Los Angeles, California
Margo Carrera – Carlsbad, California
Dean Carter – Minersville, Utah
Brenda Carter – San Diego, California
Joni Carter – Sacramento, California
Frances Carter – Sacramento, California
Emmett Cartier – West Sacramento, California
Mary Cascio – Palmdale, California

James Castaldi – Palmdale, California
Lexie Cataldo – Napa, California
Barbara Caton – Avila Beach, California
Steve Caton – Avila Beach, California
John Chachas – Ely, Nevada
Felicia Chavez – San Rafael, California
Ted Cheeseman – Saratoga, California
Karen Chepeka – Huntington Beach, California
Sunny Chien – Los Angeles, California
Nat Childs – Miranda, California
Jason Chinn – Cloverdale, California
Jonathan Chu – Santa Clara, California
Jon Chu – Fremont, California
Howard Clark – Clovis, California
Don Clay – Mesquite, Nevada
Thomas Clayton – Ely, Nevada
Bob and Jerilyn Clayton – Ely, Nevada
Jack L. Clifton – Panaca, Nevada
Penny Clifton – San Francisco, California
Gene Clough – San Jose, California
Jim Cogan – Bradenton, Florida
Benita Cohen – Los Angeles, California
Deborah Cohen – Dixon, California
Hugh S. Collett – Elko, Nevada
Vira Confectioner – Sunol, California
Pamela Conley – Cazadero, California
William and Genell Conner – Pioche, Nevada
Thomas Conroy – Manhattan Beach, California
Amy Conway – Redway, California
Carol Corbett – Las Vegas, Nevada
Francisco Costa – Cathedral City, California
Mori Costantino – Berkeley, California
Mike Couch – Ruth, Nevada
Hilton Covington – Brookside, Utah
Bruce Cox – Las Vegas, Nevada
Richard Crawford – Los Angeles, California
David Crawford – San Diego, California
Katherine Crocker – Salt Lake City, Utah
Lorna Crosby – Santa Monica, California
Elmo Crozat – Ridgeville, South Carolina
Connie Curnow – Bountiful, Utah
Kevin L. Curtis – Fullerton, California
Ena Da Silva – Sacramento, California
Diane Daleylson – Idaho Falls, Idaho
Peggy And Wayne Daniel – Genoa, Nevada
Robert Davis – San Diego, California
Ken Dawdy – San Ramon, California
Stanley Dawson – Davis, California
James R. Dawson – Torrance, California
Julianne Day-Evers – Hendersonville, North Carolina
Donald Decker – Spring Creek, Nevada

John Delevoryas – San Jose, California
Jennifer Delker – Salt Lake City, Utah
Lou Anna Denison – Long Beach, California
Jack and Margarita Denman – Fullerton, California
Larry Dennis – Union City, California
Rick Dertinger – Capistrano Beach, California
Stacy Desbrow – Newport Beach, California
Paul Desfor – Berkeley, California
Kirsten DeVere – Pasadena, California
Connie Devine – San Jose, California
William Devlin – Pioche, Nevada
Nancy Dewees – San Francisco, California
Terry and Tilda Dewolfe – Round Mountain, Nevada
Fred Dexter – Boulder City, Nevada
Sara Dinges – Camarillo, California
Bryan Dixon – Logan, Utah
James Doles – Newberry Springs, California
Ramona Doles – Newberry Springs, California
Bonnie Doran – Placerville, California
Carolyn Doswell – Studio City, California
Lenore N. Dowling – Los Angeles, California
Craig Downer – Minden, Nevada
Kevin Doyle – Santa Fe, New Mexico
Tim Aaron Doyle – Berkeley, California
Pat DuBiel – Norco, California
Stanley Dudek – Santa Cruz, California
Mike Duncan – Buena Park, California
C. J. Dupont – La Mesa, California
Gail Durham – Minden, Nevada
Mike Dwyer – Las Vegas, Nevada
Jim Dwyer – Chico, California
Claire Dye – Los Angeles, California
Susan Dzienius – San Diego, California
Scott Edmonson – San Jose, California
Ray Ehly – Reno, Nevada
Louise Eiler – Whittier, California
Judith Eisele – Verdi, Nevada
David Elliott – Fresno, California
Barry Ellis – Los Angeles, California
Michael Emery – Felton, California
Marian Emrich – Rough and Ready, California
Leslie Endicott – Oakland, California
Sharon Engel – Ojai, California
Aaron Epstein – Sherman Oaks, California
Joe Esquibel – Salt Lake City, Nevada
Douglas Estes – San Francisco, California
Karin Evans – Arnold, California
Michael W. Evans – Los Angeles, California
Nancy Evans – Los Osos, California
Jennifer Everett – San Francisco, California
Elaine Ezra – Las Vegas, Nevada

John Fairfield – San Francisco, California
Sylvia Fascio – Gerlach, Nevada
Vince Favilla – Sunnyvale, California
Mary Ferraro – Aurora, Colorado
C. Ferris – Pollock Pines, California
Warren Fieldhouse – San Jacinto, California
Anita Fieldman – Mill Valley, California
David Fitch – Reno, Nevada
Richard Fite – Fair Oaks, California
Patty Flack – Whittier, California
Claire Flewitt – Alameda, California
Patsy Floyd – Clear Lake, California
Susan Folsom – Lawndale, California
Donna Foote – Grass Valley, California
Gordon V. Foppiano – Ely, Nevada
Ken and Julie Ford Maloney – Huntington Beach, California
Nancy Forrest – Redlands, California
Nancee Fox – Santa Rosa, California
Gail Francis – Brea, California
Faith, Monte, and Julia Freewoman/Freeman and Family – Trinidad, California
John Fremont – Los Angeles, California
Erik Fremstad – Chatsworth, California
Peter French – Sparks, Nevada
Mitchell Friedman – Walnut Creek, California
Sherry Frumkin – Santa Monica, California
Sherrill Futrell – Davis, California
Bevin G. – Santa Ana, California
Marnie Gaede – La Canada, California
Stanley Gaffin – Panaca, Nevada
D. Carol Galante – San Diego, California
Alicia Galdamez – Van Nuys, California
Sheila Ganz – San Francisco, California
Shayna Gardiner – Grass Valley, California
David Gardner – Santa Monica, California
Kyle Gardner – Carmichael, California
Bill Garrett – Henderson, Nevada
Catherine Gauthier-Campbell – San Diego, California
John Geddie – Albuquerque, New Mexico
Dan Genetti – Santa Monica, California
Tom Gesick – Carson City, Nevada
Christy Gheno – Fernley, Nevada
Frank Gianopulos – Reno, Nevada
Bill Gillingham – West Valley City, Utah
Mark Giordani – Van Nuys, California
Tullio Giudici – Glendale, California
Vernon Glade – San Francisco, California
Warren Gold – Mill Valley, California
Eleanor Gomez – San Francisco, California
C. Gonzales – Provo, Utah
Alan Goodson – Los Angeles, California
Ellen Gordon – Cotati, California

Jill Gordon – Mountain View, California
Jason Gracia – Grass Valley, California
Seana Graham – Santa Cruz, California
Kimberly Graham – Coronado, California
Ronne Grasberger – Venice, California
Dale Green – Salt Lake City, Utah
Jack Greene – Smithfield, Utah
Branwen Gregory – Los Angeles, California
Probyn Gregory – Los Angeles, California
Mary Lou Griffin – Ely, Nevada
KC Grigsby – Middletown, California
Melissa Grimm-Alred – Grand Prairie, Texas
Malcolm Groome – Topanga, California
Eileen Gross – San Francisco, California
Adriana Guastavino – Rohnert Park, California
Rick Guidotti – Hollywood, California
Jared Gunnerson – Las Vegas, Nevada
Lisa Gunter – San Francisco, California
Bradley Guymon – Cedar City, Utah
Eugene Haberman – Marina Del Rey, California
Virginia Hahn – Fremont, California
Nancy Hall – Mesquite, Nevada
Janna Hall – Santa Ana, California
Linda Hall – Fontana, California
Tessa Hall – Salt Lake City, Utah
Tom and Barbara Hamilton – Oceanside, California
Charles E. Hancock – Reno, Nevada
Richard Hankins – McGill, Nevada
Judy Hanna – Carson City, Nevada
Jody Hansell – Emeryville, California
Robert Harbecke – Ely, Nevada
Daniel and Mary Agnes Hardie – Concord, California
Jenny Hardison – Tustin, California
Peter Harrell – Yreka, California
Julie Harrer – Solana Beach, California
James Harris – Stanford, California
Dallas Harrison – Las Vegas, Nevada
Jack L. Hartman – Lakeside, California
Shelley Hartmann – Hawthorne, Nevada
Jon Scott Hase – Ely, Nevada
Susan Hastings – Reno, Nevada
Roger Hatch – Alamo, Nevada
Alisha Hattaway – Mount Shasta, California
Judy Hausman – San Jose, California
Sara Hayes – Long Beach, California
Vickie Haymart – Rancho Cordova, California
Ken Hedges – Lemon Grove, California
Naomi Heiman – Los Angeles, California
Ken Heinbaugh – Ely, Nevada
Christian Heinold – Oakland, California
John Heishman – Las Vegas, Nevada

Kelly Heitman – San Diego, California
M. L. Heller – Costa Mesa, California
Miko Heller – Encinitas, California
Barb Henderson – Las Vegas, Nevada
Sharron Henderson – Milpitas, California
John Hengen – Azalea, Oregon
Bill Henninger – Corralitos, California
Paul Henninger – Garberville, California
Mel Henshaw – San Diego, California
Janet Herbruck – San Diego, California
Laura Herndon – Burbank, California
Rachel M. Hervey – Santa Margarita, California
Robert C. Hervey – Santa Margarita, California
Laura Hessel – San Lorenzo, California
Charlie and Vera Hester – Moapa, Nevada
Lisa Hewes – El Cajon, California
Hermi and John Hiatt – Las Vegas, Nevada
Joe V. Higbee – Alamo, Nevada
Richard Hildebrand – Fair Oaks, California
James Hirt – Pleasanton, California
Carol Hirth – Berkeley, California
Kathie Hittinger – Monrovia, California
Rebecca Ho – San Francisco, California
Jennie Hoagland – North Hollywood, California
Matthew Hodgin – Cypress, California
John Hodgson – Escondido, California
Wendy Hoffman – Redwood City, California
Barbara Hogan – San Francisco, California
Hazel Holby – Redwood City, California
Gary Hollis – Pahrump, Nevada
B.C. Hollis – Oakland, California
Dee Holm – Salt Lake City, Utah
Jack and Elaine Holmes – Las Vegas, Nevada
John Holtzclaw – San Francisco, California
Craig Hoover – Ely, Nevada
Bruce Horn – Mammoth Lakes, California
Patrick and Liz Howe – Ely, Nevada
Brent Howerton – Reno, Nevada
Susan Howle – Rochester, Vermont
Diana Huerta – Salinas, California
William Huggins – Las Vegas, Nevada
Melvin and Ione Hughes – Mesquite, Nevada
Arlin S. and Denice Hughes – Veyo, Utah
Joe Hughes – Willits, California
Kiturah Humphrey – Los Gatos, California
Paul Hunrichs – Santee, California
Leslie Hunt – Santa Monica, California
Otto J. Hunt – Oceanside, California
James Hunt – Chula Vista, California
John Hutchings – Las Vegas, Nevada
Terrence A. Hutchinson – California City, California

Michael S. Hutton – Mountain View, California
Sonia Ihara – Long Island, New York
Ivan Infante – Los Angeles, California
Carolee Jackson – Payson, Arizona
Keaka Jackson – San Francisco, California
Karen Jackson, LCSW – Reno, Nevada
Holly Jacobson – Sacramento, California
Paul Jacobson – Idyllwild, California
Anne Jacobson – Richmond, California
Pinky Jain Pan – Santa Rosa, California
Shunko Jamvold – San Rafael, California
Darynne Jessler – Valley Village, California
Thomas John – Reno, Nevada
Abigail Johnson – Carson City, Nevada
Buck Johnson – Lincoln, California
Fred Johnson – Virgin, Utah
Matt Johnson – Santa Monica, California
Paul Johnson – Modesto, California
Robert Johnston – Henderson, Utah
Penelope Johnstone – Oakhurst, California
Wayne Jones – Coalville, Utah
Jeffrey Jones – Henderson, Nevada
Karen Jones – Las Vegas, Nevada
Lynn Jorgensen – Springville, Utah
Lil Judd – Sylmar, California
Periel Kaczmarek – North Hollywood, California
Darci Kahan – Tujunga, California
Cindi Kane – San Juan Capistrano, California
Matt Kapko – Burlingame, California
Morris Kaplan – Willits, California
Phil and Susie Kaplan – Soquel, California
Mike Kappus – San Francisco, California
Adene Katzenmeyer – Weed, California
Dr. and Mrs. George B. Kauffman – Fresno, California
Harriet Kaufman – Las Vegas, Nevada
Joni Kay – Fulton, California
Sharon Keeney – La Quinta, California
Marcie Keever – San Francisco, California
Philip Kelin – Beverly Hills, California
Shirley Kellerman – Goleta, California
Alice Kelly – Felton, California
Bill Kennedy – Kearns, Utah
Charlene Kerchevall – Oceanside, California
Saanen Kerson – Napa, California
Dr. Mha Atma S. Khalsa – Los Angeles, California
Cheryl King – Las Vegas, Nevada
Dana Kirkelie – Felton, California
Karen Kirschling – San, Francisco, California
Carrie Klapatosk – Morgantown, North Carolina
E Klein – Park City, Utah
Jacob Knecht – Honolulu, Hawaii

Michael Kobert – San Diego, California
Gary Kohnke – Las Vegas, Nevada
Ellen Koivisto – San Francisco, California
Hkenn Kollerer – Clearlake, California
Mary Kowit – Potrero, California
Terry Kozlowski – McGill, Nevada
Lila Kraai – San Jose, California
Kathrin Kraft – Van Nuys, California
Susan Krebs – Sherman Oaks, California
Susan Krohn – Los Altos, California
Teresa Kruchowski – San Diego, California
Chris Kruger – Carson City, Nevada
Charles L. Krugman – Fresno, California
K. Krupinski – Oakwood, California
Alfredo Kuba – Mountain View, California
Tim Kukulka – Buffalo, New York
Mahoney La Pierre – Los Angeles, California
Lawrence V. and Deborah LaBarge – Portola, California
Dayer Labaron – El Paso, Texas
Randall Lake – South Pasadena, California
Ralph Lake – Boulder City, Nevada
Zena and Walter Lamp – Reno, Nevada
Marsha Langaard – Studio City, California
Eileen Langan – Penn Valley, California
Audrey Lareau – Redwood City, California
Don Larrick – Las Vegas, Nevada
Donald Larson – Pine Valley, California
Nathan Lassig – Salt Lake City, Utah
Kitt Lear – Ely, Nevada
Kristi Leatham – Logan, Utah
Catherine LeBaigue – Tujunga, California
David Lechel – Albuquerque, New Mexico
Dennis Ledden – Rancho Murieta, California
Nancy Leech – Palo Alto, California
Curt Leet – Ely, Nevada
Gerry Lent – Reno, Nevada
Seth Levy – Silver Springs, Maryland
Cheryl Levy – Los Gatos, California
Frank W. Lewis – Reno, Nevada
Gail Lewis – Irvine, California
O. Lewis – Los Angeles, California
Mary Lieb – Las Vegas, Nevada
Chadmax Limb – Beaver, Utah
Sherril Listor – Orem, Utah
Richard and Helen Livingston – Atascadero, California
Amy Lloyd – Los Angeles, California
Carol Loar – Seaside, California
Colleen Lobel – San Diego, California
Alison Locke – Burbank, California
Lance Lomprey – Henderson, Nevada
Donna S. London – Las Vegas, Nevada

Rosalind Lord – San Francisco, California
Roberto Lovato – Redwood Valley, California
Jean Lown – Logan, Utah
Alison Luedecke – Woodside, California
Roger Lundgren – Santa Clara, California
Cory Lytle – Caliente, Nevada
Francis Lytle – Caliente, Nevada
B.C. Macdonald – Albion, California
Ian MacKenzie – Fremont, California
RaLeene Makley – Ely, Nevada
Sonja Malmuth – Santa Ynez, California
Colleen Malone-Engel – Los Angeles, California
Kristie Maloney – Antioch, California
Scott Malsom – San Jose, California
Jarene Manning – Fallon, Nevada
Anthony Manzo – Taos, New Mexico
John Marchese – Henderson, Nevada
Steven Marich – Ely, Nevada
Duke Marine – Encino, California
Andrew Marjie – Sandy Valley, Nevada
Linda Marks – Sunland, California
Sherry Marsh – Oceanside, California
Laurel Marshall – Eureka, Nevada
Barrie Ann Mason – Santa Rosa, California
Barbara Mason – Campbell, California
Bob and Bernardine Mateer – Monrovia, California
John and Debbie Mathieu – San Pedro, California
K.L. Matlock – San Jose, California
Tom McCarter – San Jose, California
Robert Mcclymonds – Carmichael, California
Sudi McCollum – Glendale, California
Brian McCredie – Thousand Oaks, California
Jusdi McDonald – Missoula, Montana
Cindy McDonald – N. Las Vegas, Nevada
Mike McGinty – Ely, Nevada
Joe Mcgloin – Sheridan, Colorado
Mike Mcgrew – Las Vegas, Nevada
Julian McIntyre – Laguna Beach, California
Melvin McKinney – Eureka, California
Shoshanah McKnight – Santa Cruz, California
Alvin McLane R. – Reno, Nevada
Janine McMurdie – Newbury Park, California
Richard McNaught – Georgetown, Indiana
Michael McPherson – Vista, California
Sharon McTigue – Glendale, California
Kaye Allisen Medlin – Alamo, Nevada
Martin Meisner – Lake Forest, California
Greg Meyer – Santa Cruz, California
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Responsibility	Name	Degree(s) and Experience
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Minerals	Lynn Bjorklund	MS Biology BS Biology and Agronomy 17 years experience
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Socioeconomics	Ron Dutton	MS Economics BS Economics 31 years experience
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6.0 PREPARERS AND REVIEWERS

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	Erick Campbell	Wildlife
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	Leo Drumm	Transportation/Recreation
	Robert Gibson	Geology/Minerals
	Sandy Gregory	Fire
	Heidi Hopkins	Wild Horses and Burros
	Richard Hoops	Fluid Minerals
	Barbara Keleher	Recreation
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	Linda Mazzu	Fire Management
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	Randy McNatt	Threatened and Endangered Species
	John Menghini	Fluid Minerals
	Paul Myers (retired)	Socioeconomics
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	Steve Salzman	Fluid Minerals
	Dennis Samuelson	Lands and Realty
	Gene Seidlitz	Management Oversight
	Steve Smith	Recreation, Wilderness
	Larry Steward	Locatable Minerals
	Susie Stokke	Wild Horses
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White Pine County	Brent Eldridge	Ely, Nevada
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Yomba Shoshone Tribe	Bonnie Bobb	Austin, Nevada

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GLOSSARY

GENERAL

Adaptive Management. A process for continually improving management policies and practices by learning from outcomes of operation programs and new scientific information.

Assumptions (for analysis). The supposition that something is true (Webster's). Assumptions are identified at the beginning of the environmental consequences section, and, as needed, at the beginning of the program-specific environmental consequences analysis.

Best Management Practices. A set of practices which, when applied during implementation of management actions, ensures that negative impacts to natural resources are minimized. BMPs are applied based on site-specific evaluation and represent the most effective and practical means to achieve management goals for a given site.

BLM Sensitive Species. Plant or animal species that could become endangered or extirpated from a state, or within a significant portion of its range in the foreseeable future; is undergoing status review by the U.S. Fish and Wildlife Service; is undergoing significant current or predicted downward trend in habitat capability that would reduce a species' existing distribution, and/or downward trend in population or density such that federally listed, proposed, or candidate status may become necessary; typically consists of small and widely dispersed populations; inhabits ecological refugia, or specialized or unique habitats; or is state-listed, but which may be better conserved through application of BLM sensitive species status. Listing is approved by the BLM State Director, Director of the Nevada Department of Wildlife, and Director of the Department of Conservation and Natural Resources.

Biodiversity. The variety of organisms considered at all levels, from genetic variants of a single species, through arrays of species, genera, families, and still higher taxonomic levels.

Biological Diversity. The variety of all forms of life, used herein primarily in a general sense to refer to variety of both species and communities.

Biomass. Vegetative material left over from stand treatments. This term usually refers to such material that can be gathered and transported to cogeneration plants, and there utilized for production of electricity.

Candidate Species. Those plants and animals included in Federal Register "Notices of Review" that are being considered by the Fish and Wildlife Service for listing as threatened or endangered.

Cave Resource. Any naturally occurring void, cavity, recess, or system of interconnected passages beneath the surface of the earth or within a cliff or ledge, including any cave resource therein, that is large enough to permit a person to enter, whether the entrance is excavated or naturally formed. Also included is any natural pit or sinkhole.

Climate. The average or prevailing weather conditions of a place over a period of years. (BLM Technical Reference 4400-7)

Cumulative Effect. The impact that results from identified actions when they are added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Desired Range of Conditions. The expected outcome to be produced by implementation of the identified management actions over the period of time on which this plan is based. Synonymous with Desired Outcomes and Desired Future Conditions.

Diversity. 1) The absolute number of species in a community; species richness; 2) A measure of the number of species and their relative abundance in a community; low diversity refers to few species or unequal abundances, high diversity to many species or equal abundances.

Earnings. Wages and salaries, other labor income, and proprietor's income (including inventory valuation and capital consumption adjustments).

Ecological Analysis. A study and evaluation of the ecological system components and processes present on a given site or geographic area (e.g., watershed) with the intent of identifying 1) the degree to which the components and processes approximate what is considered to be natural and healthy conditions for this type of ecological system, and 2) the causative factors for any observed variations from healthy conditions.

Ecological Balance (also see Ecological Health). The conceptual relationship among ecological system components and processes in which the overall ecological system exists in what is considered to be a healthy condition without evidence of ongoing deterioration or changes toward some less healthy state.

Ecological Functions. Any of a wide variety of natural processes that fit within the general definition of ecological processes.

Ecological Gradients. The gradual transition in individual ecological factors, especially physical factors, from one location to another.

Ecological Health. The degree to which the integrity of the soil, vegetation, water, and air, as well as the ecological processes of an ecological system, are balanced and sustained.

Ecological Processes. The flow and cycling of energy, nutrients, and organisms in an ecological system. (See also 43 Code of Federal Regulations 4180.1(b).)

Ecological System. All the organisms in a particular region and the environment in which they live. The elements interact with each other in some way, and so are depend on each other either directly or indirectly.

Ecological Zones. Ecological systems or groups of systems that occupy particular topographic settings that are repeated at other locations of similar topographic settings throughout the region.

Ecologically Equivalent. An organism which functions in an ecological system in the same manner and with similar results to another organism even though the two may not be related or possess similar physical characteristics.

Ecology. The science of the interrelationships between organisms and their environment; from the Greek "Oikos" meaning "house" or "place to live."

Economically Viable. Possessing the promise of reasonable economic returns following consideration of investment costs and probable economic risks.

Ecosystem Approach. The ecosystem approach is the evaluation of the ecological system of both living organisms and non-living components in a defined area. This approach considers the structure, composition, function, and interrelationships of those components, as well as the societal considerations. The term ecosystem approach employs the perspective of different spatial scales with longer or shorter time frames. While the size and temporal consideration of ecological systems may vary, the watershed level is the primary scale of analysis within this RMP/EIS.

Ecosystem. The complex of a community of organisms and its environment.

Ecosystem-based Management. 1) management driven by explicit goals, executed by policies, protocols, and practices, and made adaptable by monitoring and research based on our best understanding of the ecological interactions and processes necessary to sustain ecosystem composition, structure, and function; 2) any land management system that seeks to protect viable populations of all native species, perpetuate natural-disturbance regimes on the regional scale, adopt a planning timeline of centuries, and allow human use at levels that do not result in long-term ecological degradation.

Ely Decision Area. The geographic area managed by the Ely Field Office. The area the BLM manages is approximately 11.4 million acres. The area within the boundaries of the decision area is approximately 13.9 million acres and includes National Forest, National Park, Department of Defense, Fish and Wildlife Service, state, private, etc.

Ely Field Office. The administrative unit of the BLM that manages the Ely decision area.

Endangered Species. Any species defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

Endemic Species. Native to, and restricted to, a particular geographical region, community type, or specific habitat.

Environmental Assessment. A systematic analysis of site-specific BLM activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required and also to aid an agency's compliance with the National Environmental Policy Act when no EIS is necessary.

Environmental Impact Statement (EIS). A formal document to be filed with the Environmental Protection Agency and that considers significant environmental impacts expected from implementation of a major federal action.

Exotic Species. An organism or species that is not native to the region in which it is found. Synonym nonnative: Not native; alien; a species that has been introduced into an area.

Extirpation. The localized disappearance of a species from an area.

Fragile Ecosystems. Uncommon ecosystems of limited distribution and size that support unique sensitive/endemic species or communities; ecosystems that have low resilience to environmental stress or to disturbance.

Geographic Information System (GIS). A computer system capable of storing, analyzing, and displaying data and describing places on the earth's surface.

Goal. Broad statements about desired outcomes (e.g., maintain ecosystem health and productivity). They are not quantifiable.

Habitat. The natural abode of a plant or animal, including all biotic, climatic, and edaphic factors affecting life.

Habitat management scales:
Large scale = RMP planning area
Mid scale = Watershed
Fine scale = Allotment, project, portion of a watershed

Hazardous Materials. Anything that poses a substantive present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Incomplete or Unavailable Information. When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an EIS and there is incomplete or unavailable information, the agency shall always make it clear that such information is lacking (Council on Environmental Quality 1502.22). These are identified at the beginning of the environmental consequences section.

Indicators. Indicators are observations or measurements of physical, chemical, or biological factors used to evaluate site conditions or trends, appropriate to the potential of the site. Indicators will be used to determine whether or not standards are being met.

Indigenous. Living naturally within a given area and was part of the area's flora or fauna prior to human settlement of the region.

Introduction. Intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.

Management Framework Plan (MFP). Planning decision document prepared before the effective date of the regulations implementing the land use planning provisions of the FLPMA, which establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, and objectives to be achieved for each class of land use or protection.

Management Guidelines Common to All Alternatives. Management guidance that applies to any and all of the alternatives, including the No Action and the agency-preferred alternative. These are identified at the beginning of the description of the alternatives.

Management Objective. The objectives for which rangeland and rangeland resources are managed which includes specified uses accompanied by a description of the desired vegetation and the expected products and/or values.

Management Plan. A program of action designed to reach a given set of objectives.

Management. Any actions or activities that are undertaken by the staff of the Ely Field Office that deal with the physical or biological resources found on Public lands within the Ely planning area or with the use of those resources.

Monitoring. Monitoring means the periodic observation and orderly collection of data to evaluate: 1) Effects of management actions; and 2) Effectiveness of actions in meeting management objectives. (43 Code of Federal Regulations 4100.0.5.) The orderly collection, analysis, and interpretation of resource data to evaluate progress toward meeting management objectives. (BLM Technical Reference 4400-7)

Morphology. The form and structure of an organism, with special emphasis on external features.

Multiple Use. "The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals watershed, wildlife and fish, natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return of the greatest unit output" (Federal Land Policy and Management Act).

Multiplier. A change in an economic measure resulting from a specified change in some other economic measure.

National Ambient Air Quality Standards. The allowable concentrations of air pollutants in the ambient (public outdoor) air. National ambient air quality standards are based on the air quality criteria and divided into primary standards (allowing an adequate margin of safety to protect the public health) and secondary standards (allowing an adequate margin of safety to protect the public welfare). Welfare is defined as including (but not limited to) effects on soils, water, crops, vegetation, human-made materials, animals, wild-life, weather, visibility, climate, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.

National Environmental Policy Act of 1969 (NEPA). NEPA is the basic national charter for protection of the environment. It establishes policy, sets goals, and provides means for carrying out the policy. It also contains action-forcing provisions to ensure that federal agencies follow the letter and spirit of the Act.

National Natural Landmarks. This is an area designated by the Secretary of the Interior as being of national significance to the U.S. because it is an outstanding example(s) of major biological or geological features found within the boundaries of the U.S. or its Territories or on the Outer Continental Shelf.

National significance describes an area that is one of the best examples of a biological community or geological feature within a natural region of the U.S., including terrestrial communities, landforms, geological features and processes, habitats of native plant and animal species or fossil evidence of the development of life.

This program aims to encourage and support voluntary preservation of sites that illustrate the geological and ecological history of the U.S., and to strengthen the public's appreciation of America's natural heritage. To be considered for National Natural Landmark status, a site must be one of the best examples of a natural region's characteristic biotic or geologic features.

Native Species. With respect to a particular ecological system, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecological system.

Natural Resources. These include topography (consider slope and drainage patterns), soil, water courses and/or waterbodies, geological formations, vegetation (consider rare, threatened, or endangered species), and fish and wildlife (consider rare, threatened, or endangered species).

Natural System. This refers to a biological, soil, and physical environment largely, but not necessarily entirely, controlled by natural processes rather than by intensive human activity, e.g., the comparison between rangelands and tilled agricultural croplands.

Naturalized Species. An exotic or introduced species that has become established and exhibits successful reproduction in an ecosystem.

Net Value Change. The sum of the changes resulting from increases (benefits) and decreases (damages) in the value of outputs from the land area affected as the consequences of fire. An average dollar value per acre is assigned based on the change to all resources including range, watershed, wildlife, soils, and recreation.

Objective. Objectives identify specific desired conditions for resources. They can be quantified and measured and may have established timeframes for achievement (e.g., manage vegetative communities on the upland portion of the Clear Creek watershed to achieve by 2020 an average 30 to 40 percent canopy cover of sagebrush).

Permit. Authorization in writing by the authorized officer or other person authorized by the U.S. Government, and is a contract between the permittee and the U.S.

Personal Income. Employee compensation plus property income.

Physiographic Province. A geographic region with similar climatic, land form, and geologic features, and which is significantly different from adjacent regions.

Planning Criteria. Guidelines for the planning effort that serve as the sideboards.

Productivity. The potential rate of incorporation or generation of energy or organic matter (biomass) by an organism, population or trophic unit per unit time per unit area; plant productivity is termed primary production, and animal productivity is termed secondary production.

Rangeland Health. The degree to which the integrity of the soil and the ecological processes of rangeland ecosystems are sustained.

Resistance. The ability to resist; especially, the inherent capacity of a living organism (or assemblage of organisms) to resist external forces and adverse circumstances such as disease, drought, lack of nourishment, or toxic agents.

Resource. Any component of the environment that can be utilized by an organism.

Resource Advisory Council. A citizen-based group of 10 to 15 members chartered under the Federal Advisory Committee Act and appointed by the Secretary of the Interior to forward advice on public land planning and management issues to the BLM. Council membership reflects a balance of various interests concerned with the management of the public lands and users of the public lands.

Resource Management Plan (RMP). A BLM multiple-use planning document, prepared in accordance with Section 202 of the Federal Land Policy and Management Act, that:

- Establishes resource conditions goals and objectives to be attained;
- Allocates resources and identifies allowable uses;
- Identifies land area for limited, restrictive, or exclusive uses; and
- Provides guidance for implementation of the decisions made in the plan.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. For example, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Special Status Species. Plant or animal species that are federally listed, proposed, or candidate species; state protected species; or BLM sensitive species.

Species. A taxon of the rank species; which is the basic unit, and lowest principal category, of biological classification; in the hierarchy of biological classification, the category below genus; a group of organisms formally recognized as distinct from other groups.

Stakeholders. Stakeholders means, but is not limited to, state, Tribal, and local government agencies, academic institutions, the scientific community, nongovernmental entities including environmental, agricultural, and conservation organizations, trade groups, commercial interests, and private landowners.

Standard Operating Procedures. Synonymous with “mitigating measures”; a standard operating procedure would mitigate a potential impact. These are actions that the Ely Field Office automatically takes as part of a management action or project (e.g., flagging a new fence for visibility by wildlife and horses). These may be common to all alternatives.

Standards. The goal to be strived for.

Sustainability. The ability to maintain diversity, productivity, resilience to stress, health, renewability, and yields of desired values, resource uses, products, or services over time in an ecosystem while maintaining its integrity.

Threatened Species. Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the Federal Register.

Trend. The direction of change over time, either toward or away from desired management objectives.

Upland. Terrestrial ecosystems located away from riparian zones, wetlands, springs, seeps and dry washes; ecosystems made up of vegetation not in contact with groundwater or other permanent water sources.

Urban Interface. An area where urban encroachment into adjacent wildland areas is increasing the complexity and magnitude of problems related to all aspects of natural resource management and protection, including increased fire risks, unauthorized use, and littering.

CULTURAL RESOURCES

Archaeological Resource. Any material remains of past human life or activities which are of archaeological interest. These include, but are not limited to: pottery, basketry, bottles, weapons, projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items. Nonfossilized and fossilized paleontological specimens, or any portion or piece thereof, shall not be considered archaeological resources unless found in an archaeological context. No item shall be treated as an archaeological resource unless such item is at least 100 years of age. (Archaeological Resources Protection Act of 1979: Definitions 16 USC 470bb).

Archaeological Site. A geographic locale that contains the material remains of prehistoric and/or historic human activity.

Archaeology. The reconstruction of past cultures through their material remains and the study of how cultures change over time.

Conservation for Future Use. This category is reserved for any unusual cultural property which, because of scarcity, a research potential that surpasses the current state of the art, singular historic importance, cultural importance, architectural interest, or comparable reasons, is not currently available for consideration as the subject of scientific or historical study that would result in its physical alteration. A cultural property included in this category is deemed worthy of segregation from all other land or resource uses, including cultural resources uses that would threaten the maintenance of its present condition or setting, as pertinent, and will remain in this use category until specified provisions are met in the future.

- Where the primary allocation is to Conservation for Future Use:
  - Data recovery would not be permitted
  - Scientific Use would only occur when non-destructive
  - Experimental Use would be incompatible with Conservation for Future Use
  - No new actions would be approved that would require data recovery or diminish the scientific value of the resource

Cultural Property. A definite location of past human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence (BLM Manual 8100).

Cultural Resource Inventory Classes.

Kinds of Inventory: the BLM cultural resource inventory system is composed of three kinds of inventory: Class I – existing information inventory; Class II – probabilistic field survey; and Class III – intensive field survey. Each is designed to provide specific cultural resource information for various planning and resource needs.

Class I – existing information inventory: a study of published and unpublished documents, records, files, registers, and other sources resulting in an analysis and synthesis of all reasonably available data. Class I inventories encompass prehistoric, historic, and ethnological/sociological elements, and are in large part chronicles of past land uses. They may have major relevance to current land use decisions.

Class II – probabilistic field survey: a statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological properties in a large area by interpreting the results of surveying limited and discontinuous portions of the target area (reconnaissance survey). For example, Class II level inventories are appropriate for Caves and Rockshelters, which normally can be detected with this type of sample design inventory.

Class III – intensive field survey: a continuous, intensive survey of an entire target area, aimed at locating and recording all archaeological properties that have surface indications, by walking close-interval parallel transects until the area has been thoroughly examined.

Cultural Resources. A broad general term meaning any cultural property and any traditional lifeway value (BLM Manual 8100). It includes prehistoric, historic, ethnographic, tribal heritage, ethnohistoric, engineering, architectural, and technological resources.

Discharged from Management. This category is assigned to cultural properties that have no remaining identifiable use. Most often these are prehistoric and historic archaeological properties, such as small surface scatters of artifacts or debris, whose limited research potential is effectively exhausted as soon as they have been documented. Also, more complex archaeological properties that have had their salient information collected and preserved through mitigation or research may be discharged from management, as should cultural properties destroyed by any natural event or human activity. Properties discharged from management remain in the inventory, but they are removed from further management attention and do not constrain other land uses. Particular classes of unrecorded cultural properties may be named and described in advance as dischargeable upon documentation, but specific cultural properties must be inspected in the field and recorded before they may be discharged from management.

Experimental Use. This category may be applied to a cultural property judged well-suited for controlled experimental study, to be conducted by BLM or others concerned with the techniques of managing cultural properties, which would result in the property's alteration, possibly including loss of integrity and destruction of physical elements. Committing cultural properties or the data they contain to loss must be justified in terms of specific information that would be gained and how it would aid in the management of other cultural properties. Experimental study should aim toward understanding the kinds and rates of natural or human-caused deterioration, testing the effectiveness of protection measures, or developing new research or interpretation methods and similar kinds of practical management information. It should not be applied to cultural properties with strong research potential, traditional cultural importance, or good public use potential, if it would substantially diminish those uses.

Historic. Period wherein nonnative cultural activities took place, based primarily upon European roots, having no origin in the traditional Native American culture(s).

Historic Property. "…any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. The term includes, for purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term 'eligible for inclusion in the National Register' includes both properties formally determined as such by the Secretary of the Interior and all other proper-ties that meet National Register listing criteria…" {quoted from 36 CFR 900.2(e)}.

National Register of Historic Places. A register of districts, sites, buildings, structures, and objects, significant in American history, architecture, archaeology and culture, established by the "Historic Preservation Act" of 1966 and maintained by the Secretary of the Interior.

Paleontology. The study of fossils; what fossils tell us about the ecologies of the past, about evolution, and about out place, as humans, in the world. Informs us about interrelationship between the biological and geological components of ecosystems over time.

Public Use. This category may be applied to any cultural property found to be appropriate for use as an interpretative exhibit in place, or for related educational and recreational uses by members of the general public. The category may also be applied to buildings suitable for continued use or adaptive use, for example, as staff housing or administrative facilities at a visitor contact or interpretative site, or as shelter along a cross-country ski trail. Criteria to recognize Public Use at an archaeological/historic site:

- Physical evidence of public use at an archaeological site
  - evidence of display piles
  - trash
  - fire rings/campfires
  - tire tracks leading to site
  - visitor trails through site
- Monitoring of site by volunteers
- Location identified on public maps and websites, in guidebooks and newsletters

Rock Art. Petroglyphs or pictographs.

Sacred Site. Any specific, discrete, narrowly delineated location of federal land that is identified by an Indian tribe, or individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site (quoted from Executive Order 13007, Section 7 1(b)(iii)).

Scientific Use. This category applies to any cultural property determined to be available for scientific or historical study using currently available research techniques, including methods that would result in the property's physical alternation or destruction. The category applies almost entirely to prehistoric and historic archaeological properties, where the method of use is generally archaeological excavation, controlled surface collection, and/or controlled recordation (data recovery). Recommendations to allocate individual properties to this use must be based on documentation of the kinds of data the property is thought to contain and the data's importance for pursuing specified research topics. Properties in this category need not be conserved in the face of a research or data recovery (mitigation) proposal that would make adequate and appropriate use of the property's research importance.

Traditional Cultural Property. A cultural property that derives significance from traditional lifeway values associated with it. A traditional cultural property may qualify for the National Register if it meets the criteria and criteria exceptions at 36 Code of Federal Regulations 60.4 (BLM Manual 8100 – The Foundations for Managing Cultural Resources, page 34).

Traditional Lifeway Values. The quality of being useful in or important to the maintenance of a specified social and/or cultural group's traditional systems of (a) religious belief, (b) cultural practice, or (c) social interaction, not closely identified with definite locations. Another group's shared values are abstract, nonmaterial, ascribed ideas that one cannot know about without being told (BLM Manual 8100).

Traditional Use. This category is to be applied to any cultural resource known to be perceived by a specified social and/or cultural group as important in maintaining the cultural identity, heritage, or well-being of the group. Cultural properties assigned to this category are to be maintained in ways that recognize the importance ascribed to them and seek to accommodate their continuing traditional use.

FIRE

Appropriate Management Response. Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Emergency Stabilization. Actions taken immediately following a fire event to 1) stabilize soils against erosion, 2) protect threatened and endangered species habitats against further degradation, 3) prevent further damage to known fire-damaged historic properties, and 4) prevent invasive plant establishment.

Escaped Fire. A fire that has exceeded initial attack capabilities.

Fire Effects. The physical, biological, and ecological impact of fire on the environment.

Fire Intensity. The product of the available heat of combustion per unit area of ground and the rate of spread of the fire.

Fire Management Area. One or more parcels of land having a common set of fire management objectives.

Fire Regime. Periodicity and pattern of naturally occurring fire in a particular area or vegetative type, described in terms of frequency, biological severity, and area extent (Society of American Foresters 1996).

Fire Return Interval. The number of years between two successive fires documented in a designated area (such as the interval between two successive fire occurrences).

Fire Strategy. An overall plan of action for fighting a fire that gives regard to the most cost-efficient use of personnel and equipment in consideration of values threatened, fire behavior, legal constraints, and objectives established for resource management. Leaves decisions on the tactical use of personnel and equipment to line commanders in the suppression function.

Fire Suppression. All the work activities connected with fire-extinguishing operations, beginning with the discovery and continuing until the fire is completely extinguished.

Fuel Type. An identification association of fuel elements of distinctive species, form, size, arrangement or other characteristics that will cause a predictable rate of spread or resistance to control under specific weather conditions.

Fuels. Includes living and dead plant materials that are capable of burning.

Greenstripping. The practice of establishing or using patterns of fire-resilient vegetation and/or material to reduce wildfire occurrence and size. Examples are establishing fire-resilient vegetation adjacent to roads or railways, around or interspersed in valuable shrub stands, or within large blocks of flash fuels.

Phase 1 Fire Planning. The first phase of a two-stage fire management planning process that identifies desired resource conditions and fire management direction, including fire management strategies, which will promote achievement of resource objectives.

Prescribed Fire. Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and National Environmental Policy Act requirements must be met, prior to ignition.

Rehabilitation. The activities necessary to repair damage or disturbance caused by wildfire or the fire suppression activity.

Risk Assessment. Assessing the chance of fire starting, natural or human-caused, and its potential risk to life, resources, and property.

Values-at-risk. Any or all natural resources, improvements, or other values that may be jeopardized if a fire occurs (value-at-risk, risk of resource values).

Wildland Fire. Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Implementation Plan. A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selected criteria for the management of wildland fire use.

Wildland Fire Situation Analysis. A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria for suppression of a fire.

Wildland Fire Use. Any fire ignited by natural means, such as lightning, which is managed for resource benefits.

Wildland Urban Interface. The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels.

GEOLOGY AND MINERALS

Alluvium. Material deposited on the land by water, such as gravel, sand, silt, or clay.

Badlands. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels, most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Clay (Geology). A rock or mineral fragment of any composition finer than 0.00016 inches in diameter. Mineral*:* A hydrous aluminum-silicate that occurs as microscopic plates, and commonly has the ability to absorb substantial quantities of water on the surface of the plates.

Erosion (Geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains; synonymous with *natural erosion*.

Fluvial (Fluviatile) Deposit. A sedimentary deposit laid down, transported by, or suspended in, a stream.

Graben. A fault-bounded down-dropped portion of the Earth's crust.

Gravel (Geology). Fragments of rock worn by the action of air and water, larger and coarser than sand.

Hot-springs Deposit. A type of hydrothermal deposit formed in a hot-springs environment.

Hydrothermal Deposit. A mineral deposit formed by hot, mineral-laden fluids.

Igneous Rock. Rock that solidified from a molten or semimolten state. The major varieties include intrusive (solidified beneath the surface of the Earth) and volcanic (solidified on or very near the surface of the Earth).

Known Geothermal Resource Area. "An area in which the geology, nearby discoveries, competitive interest, or other indicia would, in the opinion of the Secretary, engender the belief in men who are experienced in the subject matter that the prospect for extraction of geothermal stream or associated geothermal resources are good enough to warrant expenditures or money for that purpose" [43 Code of Federal Regulations 3200.0-5(k)].

Lacustrine Deposit (Geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Leasable Minerals. Those minerals that are leased to individuals for their exploration and development. The leasable minerals have been subdivided into two classes, fluid and solid. Fluid minerals include oil and gas; geothermal resources and associated by-products; and oil shale, native asphalt, oil impregnated sands and any other material in which oil is recoverable only by special treatment after the deposit is mined or quarried. Solid leasable minerals are specific minerals such as coal and phosphates. All minerals on acquired lands are considered to be leasable minerals. Leasable minerals are associated with the following laws: Mineral Leasing Act of 1920, as amended and supplemented, Mineral Leasing Act for Acquired Lands of 1947, as amended, and the Geothermal Steam Act of 1970, as amended.

Limestone. A sedimentary rock consisting chiefly of calcium carbonate.

Locatable Minerals. Those that have been described as "valuable mineral deposits." These include precious and base metal ores such as gold, silver, copper, or lead, and certain industrial minerals such as gypsum, chemical grade limestone, and chemical grade silica sand. Uncommon varieties of mineral materials such as pozzolan, pumice, decorative rock, and cinders also are regulated as locatable minerals. These minerals are regulated under the General Mining Law of 1872, as amended, and Surface Use and Occupancy Act of July 23, 1955.

Magma. Molten rock from within the Earth capable of flowing like liquid.

Metamorphosed. Rock that has been altered in composition, texture, or structure by heat and/or pressure.

Mineral Materials. Common geologic materials that include sand, gravel, and common clay. Mineral materials are sold through contract and are regulated under the Mineral Material Act of July 23, 1947, as amended, and the Surface Use and Occupancy Act of July 23, 1955.

No Surface Occupancy. A fluid mineral leasing stipulation that prohibits occupancy or disturbance on all or part of the lease surface to protect special values of uses. Lessees may explore for or exploit the fluid minerals under leases restricted by this stipulation by using directional drilling from sites outside the no surface occupancy area.

Porphyry Deposit. A large, low-grade metallic mineral deposit containing disseminated sulfide minerals (examples: copper, gold, molybdenum, or tin).

Rhyolite. A fine-grained light-colored silica-rich igneous rock composed largely of potash feldspars and quartz.

Salable Minerals. See Mineral Materials.

Sand. (geology) A rock fragment or detrital particle between 0.0025 and 0.08 inches in diameter.

Schist. A metamorphic rock characterized by coarse-grained minerals oriented approximately parallel.

Silt (Geology). A rock fragment or detrital particle smaller than very fine sand and larger then coarse clay, ranging from 0.0024 to 0.00016 inches in diameter and commonly having a high content of clay minerals.

Slate. A compact, fine-grained, platy metamorphic rock formed from shale or claystone.

Special Stipulation. A specific operating condition or limitation added to a mineral lease to protect sensitive resources. It modifies the original terms and conditions of that lease.

Surface Occupancy. See definition for No Surface Occupancy.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valid Existing Rights. Locatable mineral development rights that existed when the Federal Land Policy and Management Act was enacted on October 21, 1976. Some areas are segregated from entry and location under the Mining Law to protect certain values or allow certain uses. Mining claims that existed as of the effective date of the segregation may still be valid if they can meet the test of discovery of a valuable mineral required under the Mining Law. Determining the validity of mining claims located in segregated lands requires BLM to conduct a validity examination and is called a “valid existing rights” determination.

GRAZING

Active Use. The current authorized use, including livestock grazing and conservation use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary nonuse or suspended use of forage within all or a portion of an allotment.

Actual Use Data. The number of livestock, kind or class of those livestock, and time period those livestock actually grazed a specific allotment or pasture.

Animal Unit. One cow, one cow/calf pair, one horse, or five sheep.

Animal Unit Month. The forage needed to support one cow, one cow/calf pair, one horse, or five sheep for one month. Approximately 800 pounds of forage.

Authorized Use. This is the amount of use a permittee is billed for (the bill is the authorization to graze). It may or may not be the total active use. Example: If a permittee has 500 animal unit months of active use, he may only be authorized 300 animal unit months for a certain year, but cannot be authorized above 500 animal unit months. This changes from year to year, based on fluctuation of the permittees livestock herd, vegetation production, drought, etc.

Deferred Grazing. Discontinuance of grazing by livestock on an area for a specified period of time during the growing season to promote plant growth, reproduction, establishment of new plants, or restoration of vigor by old plants.

Deferred Rotation Grazing. Discontinuance of grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor. Two, but usually three or more, separate units are required. Control is usually insured by unit fencing, but may be obtained by camp unit herding.

Distribution (Grazing). Dispersion of grazing animals within a management unit or area.

Ecological Site Inventory. The basic inventory of present and potential vegetation on BLM rangelands. Ecological sites are differentiated on the basis of the kind, proportion, or amount of plant species.

Forage. The plant material actually consumed by (or available to) grazing animals.

Grazing Distribution. Dispersion of livestock grazing within a management unit or area.

Guidelines. Guidelines are livestock management practices (e.g., tools, methods, strategies, and techniques) designed to achieve healthy public lands as defined by Standards and portrayed by Indicators. Guidelines are designed to provide direction, yet offer flexibility for local implementation through activity plans and grazing permits. Activity plans may add specificity to the Guidelines based on local goals and objectives as provided for in adopted manuals, handbooks, and policy. Not all Guidelines fit all circumstances. Monitoring or site specific evaluation will determine if significant progress is being made towards achieving the Standards, and if the appropriate Guidelines are being applied.

Intensity (Grazing). A reference to grazing density per unit of time.

Performance-based Grazing Management (Conservation Partnerships). A voluntary arrangement in which a grazing permit holder enters into a performance-based agreement with the agency aimed at promoting ecological health of an allotment. Performance-based actions would include those that help restore stream banks and wetlands, enhance water quality and quantity, improve wildlife habitat, and promote recovery of special status species. In return the permittee receives greater management flexibility and the potential for increased livestock grazing made possible by success in the conservation efforts.

Permitted Use. The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and is expressed in animal unit months.

Range Improvement. Range improvement means an authorized physical modification or treatment that is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; restore, protect and improve the condition of rangeland ecosystems to benefit livestock, wild horses, and fish and wildlife. The term includes but is not limited to, structures, treatment projects, and use of mechanical devices or modifications achieved through mechanical means.

Residual Vegetation. Amount, cover, and species composition of the vegetation on a site after it has been grazed for a period of time.

Rest-rotation Grazing. An intensive system of management whereby grazing is deferred on various parts of the range during succeeding years, allowing the deferred part complete rest for one year. Two or more units are required. Control by fencing is usually necessary on cattle range, but may be obtained by herding on sheep ranges.

Surface Characteristics. The amount of bare ground, litter, rock, and basal cover of live vegetation, which may include cryptograms (Nevada Rangeland Monitoring Handbook).

Sustained Yield. "The achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use" (Federal Land Policy and Management Act of 1976).

LANDS, RECREATION, AND SPECIAL DESIGNATIONS

Access. The physical ability to have legal ingress to and egress from public lands via public roads or on routes having public easements.

Acquired Lands. Lands acquired for BLM administration in various ways, such as but not limited to: 1) any lands purchased by congressionally appropriated funds, 2) land donations, 3) land exchanges, 4) Land and Water Conservation Fund acquisitions, 5) land withdrawals returned to public land status through withdrawal revocations and/or relinquishments, etc., 6) split-estate acquisitions, 7) federal agency jurisdictional transfers, 8) easement acquisitions, and/or 9) lands acquired by any other means.

Area Of Critical Environmental Concern (ACEC). Area where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect humans from natural hazards.

Avoidance Areas. Areas with sensitive resource values where rights-of-way would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

Back-country Byway. Vehicle routes that traverse scenic corridors utilizing secondary or back-country road systems. National back-country byways are designated by the type of road and vehicle needed to travel the byway.

Closed. Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs.

Corridor. A wide strip of land within which a proposed linear facility could be located.

Designated Corridor. A parcel of land identified by law, Secretarial order, through a land use plan or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way that are similar, identical or compatible.

Designation. The approval of a resource management plan, plan revision, or plan amendment constitutes formal designation of off-highway vehicle use areas.

Exclusion Areas. Areas with sensitive resource values where rights-of-way would be prohibited.

Extensive Recreation Management Area. Area where recreation management is less structured (than within a special recreation management area) and recreation use more dispersed with minimal regulatory constraints and where minimal recreation-related investments are required.

High Resource Values. Lands with high resource values are considered to be public lands that have the caliber of resources to qualify them for inclusion in special management areas such as ACECs, National Wild and Scenic Rivers, Wilderness Study Areas, and high resource areas such as critical wildlife habitat areas, wild horse herd areas, critical fish habitat areas, cultural site areas, threatened and endangered species habitats, etc. Long-term retention of Public lands in these special management areas is either required by law through Congressional action or identified through the land use planning process.

Integrated Use. To merge the use of each type of public land use through a series of land management practices.

Interim Management Policy. Policy for managing public lands under wilderness review. Section 603 (c) of the Federal Land Policy and Management Act of 1976 states: "During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness, subject, however, to the continuation of existing mining and grazing uses and mineral leasing in the manner and degree in which the same was being conducted on the date of approval of this Act: Provided, that, in managing the public lands the Secretary shall by regulation or otherwise take any action required to prevent unnecessary or undue degradation of the lands and their resources or to afford environmental protection."

Land Use Allocations. Allocations that define allowable uses/activities, restricted uses/activities, and prohibited uses/activities. They may be expressed in terms of area such as acres or miles. Each allocation is associated with a specific management objective.

Land Use Plan. Land use plan means a resource management plan, developed under the provisions of 43 Code of Federal Regulations part 1600, or management framework plan. These plans are developed through public participation in accordance with the provisions of the Federal Land Policy and Management Act of 1976 and establish management direction for resource uses of public lands. (43 Code of Federal Regulations 4100)

Limits of Acceptable Change. For recreation management, a nine-step process used to define the desired resource conditions for an area and to determine acceptable levels of resource change due to recreation use. The process helps to develop management actions to avoid exceeding standards.

Mechanized Vehicle. Any non-motorized vehicle capable of or designed for travel on land. An example of a mechanized vehicle is a mountain bike.

Military Operations Area. A type of low-altitude military airspace that is controlled, when active, to separate military activities from civilian air traffic. Depending on the specific military operations area, military aircraft may maneuver to altitudes as high as 18,000 feet above mean sea level, and supersonic flight may be authorized. Training activities typically include basic fighter maneuvers, air combat tactics, low-altitude tactical navigation, and simulated air-to-surface missions.

Naturalness (a primary wilderness value). An area that generally appears to have been affected primarily by the forces of nature with the imprint of people's work substantially unnoticeable.

Off-highway Vehicle. A vehicle that can be operated off of improved and regularly maintained roads with hardened or gravel surfaces.

Off-highway Vehicle Designation:

- Open: Designated areas and trails where off-highway vehicles may be operated subject to operating regulations and vehicle standards set forth in BLM Manuals 834l and 8343.
- Limited: Designated areas and trails where off-highway vehicles are subject to restrictions limiting the number or types of vehicles, date, and time of use; limited to existing or designated roads and trails.
- Closed: Areas and trails where the use of off-highway vehicles is permanently or temporarily prohibited. Emergency use is allowed.

Off-Highway Vehicle Emphasis Area. A special recreation management area that emphasizes motorized recreation over other recreational opportunities. These are not designated off-highway vehicle open areas. Within the special recreation management area, trails and routes would be designated for motorized recreational opportunities. Off-road motorized travel would not be permitted for recreational purposes.

Patent. The instrument by which the Federal Government conveys title to the public lands.

Primary Wilderness Values. The primary or key wilderness values described in the "Wilderness Act" by which Wilderness Study Areas and designated wilderness are managed to protect and enhance the wilderness resource. Values include roadlessness, naturalness, solitude, primitive and unconfined recreation, and size.

Primitive and Unconfined Recreation (a primary wilderness value). Nonmotorized and undeveloped types of outdoor recreation activities. Refers to wilderness recreation opportunities, such as nature study, hiking, photography, backpacking, fishing, hunting, and other related activities. Does not include the use of motorized vehicles, bicycles, or other mechanized means of travel.

Public Land. Any land or interest in land owned by the U.S. and administered by the Secretary of the Interior through the BLM.

Recreation Opportunity Spectrum. A means of characterizing recreation opportunities in terms of setting, activity, and experience opportunities.

Recreation Site. An area where management actions are required to provide a specific recreation setting and activity opportunities, to protect resource values, provide public visitor safety and health, and/or to meet public recreational use demands and recreation partnership commitments. A site may or may not have permanent facilities.

Research Natural Area. An area where natural processes predominate and which is preserved for research and education. Under current BLM policy, these areas must meet the relevance and importance criteria of ACECs and are designated as ACECs.

Right-of-way. A permit or an easement authorizing the use of public land for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, etc. Also, the reference to the land covered by such an easement or permit.

Road. Travel route that has been improved and maintained by mechanical means to ensure relatively regular and continuous use.

Rural Interface Areas. Areas where BLM-administered lands are adjacent to or intermingled with privately owned lands zoned for 1- to 20-acre lots, or areas that already have residential development.

Solitude (a primary wilderness value). The state of being alone or remote from habitations; a lonely, unfrequented, or secluded place. The intent is to evaluate the opportunity for solitude in comparison to habitations of people.

Special Recreation Management Area. An area where recreation is one of the principal management objectives, where intensive recreation management is needed, and where more than minimal recreation-related investments are required.

Special Recreation Permit. Authorizations, which allow for recreational uses of the public lands and related waters. They are issued as a means to control visitor use, protect recreational and natural resources, provide for the health and safety of visitors, and as a mechanism to accommodate commercial recreational use of public lands.

Trail. A pathway usually created and maintained by human foot traffic, beasts-of-burden, livestock, or wildlife.

Visit. A unit of measure for evaluating the amount of recreational activity on public land; equivalent to one person spending any part of a day recreating on Public land.

Visual Resource Management Classes. A classification of landscapes according to the kinds of structures and changes that are acceptable to meet established visual goals (BLM).

Visual Resources. The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Way. A trace maintained solely by the passage of vehicles which has not been improved and/or maintained by mechanical means to ensure relatively regular and continuous use.

Wilderness Inventory. A written description of resource information and data, and a map of those public lands that meet the wilderness criteria as established under Section 603 (a) of the Federal Land Policy and Management Act of 1976 and Section 2 (c) of "The Wilderness Act."

Wilderness Study Area. A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 603 of the Federal Land Policy and Management Act of 1976 and section 2 (c) of "The Wilderness Act." Wilderness Study Areas were administratively designated by BLM following evaluation of wilderness inventories.

Withdrawal. A withdrawal is a formal action that transfers total or partial jurisdiction of federal land between federal agencies, segregates (closes) federal land to some or all of the public land laws and/or mineral laws, or dedicates land for a specific public purpose. There are three major categories: Congressional, administrative, and Federal Energy Regulatory Commission withdrawals.

SOIL

Association, Soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single soil map unit.

Biological (Cryptogamic) Soil or Crust. Community of non-vascular primary producers that occur as a "crust" on the surface of soils; made up of a mixture of algae, lichens, mosses, and cyanobacteria (bluegreen algae).

Calcareous Soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Classification, Soil. The systematic arrangement of soils into groups or categories on the basis of their characteristics.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clayey Soil. Silty clay, sandy clay, or clay.

Coarse Textured Soil. Sand or loamy sand.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Compaction, Soil. An increase in soil bulk density of 15 percent or more from the undisturbed level.

Complex, Soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Cryptogamic Crust. See microbiotic crust.

Erosion. (v.) Detachment and movement of soil or rock fragments by water, wind, ice, or gravity. (n.) The land surface worn away by running water, wind, ice, or other geologic agents, including such processes as gravitational creep.

Erosion (Accelerated). Erosion much more rapid than geologic erosion, occurring mainly as a result of human or animal activities or of a catastrophe in nature, such as with fire, that exposes the surface.

Fertility, Soil. The quality that enables a soil to provide plant nutrients in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine Textured Soil. Sandy clay, silty clay, or clay.

Functionality, Soil. The maintaining of soil structure and texture characteristics, such as aeration, temperature, moisture, nutrition and the organisms that live in the soil.

Gravel. (Geology) Unconsolidated, rounded rock fragments greater than 0.08 inch in diameter. Sizes range from pebbles (0.008 to 2.5 inches) to cobbles (2.5 to 10 inches) to boulders (greater than 10 inches).

Horizon, Soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Map Unit. The basic system of description in a soil survey and delineation on a soil map. Can vary in level of detail.

Medium Textured Soil. Very fine sandy loam, loam, silt loam, or silt.

Microbiotic Crust. Lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing on or just below the surface of soils.

Order 3 Soil Survey. A reconnaissance survey with extensive ground truthing. Minimum delineation sizes are typically on the order of 40 to 80 acres.

Organic Matter. Plant and animal residue in the soil in various stages of decomposition.

Permeability. The quality of the soil that enables water to move downward through the profile, measured as the number of inches per hour that water moves downward through the saturated soil.

pH Value. A numerical designation of acidity and alkalinity in soil (see “reaction, soil”).

Productivity, Soil. The organic fertility or capacity of a given area or habitat.

Profile, Soil. A vertical section of the soil extending through all its horizons and into the parent material.

Quality, Soil. Soil quality is the capacity of a specific kind of soil to function, within natural or managed ecological system boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation. Changes in the capacity of soil to function are reflected in soil properties that change in response to management or climate.

Saline Soil. A soil containing soluble salts in an amount that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

Sediment. Soil, rock particles, and organic or other debris carried from one place to another by wind, water or gravity.

Series, Soil. A nationally defined soil type set apart on distinct soil properties that affect use and management. In a soil survey, this includes a group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Silt (Soil). Individual mineral particles ranging in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class: Soil that is 80 percent or more silt and less than 12 percent clay.

Sodic (alkali) Soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Soil. 1) The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants; 2) the unconsolidated mineral matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of parent material, climate (including moisture and temperature effects), macro- and micro-organisms, and topography, all acting over a period of time and producing a product -soil- that differs from the material it was derived in many physical, chemical, biological, and morphological properties and characteristics.

Structure, Soil. The arrangement of primary soil particles into compound particles or aggregates.

Survey, Soil. A field investigation resulting in a soil map showing the geographic distribution of various kinds of soil and an accompanying report that describes the soil types and interprets the findings.

Texture, Soil. The relative proportions of sand, silt, and clay particles in a mass of soil.

VEGETATION AND WOODLANDS

Annual Growth. The amount of production of new above-ground plant biomass for a given site during a given year.

Attribute. A discreet feature or characteristic of biotic or physical resources that can be measured (example: plant density, which is the number of individuals or stems per unit area).

Canopy Cover. The percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included. (BLM Technical Reference 4400-7)

Community Structure. Refers to the presence of multiple plant life forms (trees, shrubs, grasses, and forbs) and their relative abundance within a given vegetation community.

Conifer. A tree of the order Coniferae with cones and needle-shaped or scale-like leaves.

Control. Control means, as appropriate, eradicating, suppressing, reducing, or managing invasive species populations, preventing spread of invasive species from areas where they are present, and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasions.

Desired Natural Plant Community. The type of plant community which is desired for a particular ecological site. This could include native and non-native species depending on the desired land use, but as a natural plant community it must have native species adapted to the climate and soil type as dominants or co-dominants in the community.

Desired Plant Community. Of the several plant communities that may occupy a site, the one that has been identified through a management plan to best meet the plan's objectives for the site. It must protect the site as a minimum.

Deterioration or Decline (of vegetation communities). A pattern of changes in vegetation communities leading to loss of perennial understory species, reduction in overall species diversity, increase in shrub or tree dominance in communities that are not naturally shrublands or woodlands. These changes indicate that the vegetation community is approaching or undergoing a transition to another vegetation state from which conditions are not easily reversible.

Diameter at Breast Height (DBH). The diameter of a tree measured 4.5 feet above the ground.

Ecological Site. A distinctive kind of land with specific physical characteristics that differ from other kinds of land in its ability to produce a distinctive kind and amount of vegetation.

Ecological Status. The present state of vegetation of a range site in relation to the potential natural community for that site. Four classes are used to express the degree to which the production or composition of the present plant community reflects that of the potential natural community (climax):

Ecological Status (Seral stage)	Percent of Community in Climax Condition
Potential natural community	76–100
Late seral	51–75
Mid-seral	26–50
Early seral	0–25

As stated in Section 2.5.5, this concept has been superseded by state-and-transition models, which serve as the basis for vegetation management in this RMP.

Forb. Any herbaceous plant not a grass or a grasslike species.

Forest Health. The condition in which forest ecosystems sustain their complexity, diversity, resiliency, and productivity while providing for human needs and values.

Fragmentation. Process of reducing the size and connectivity of vegetated stands and/or habitat that comprise a rangeland or forest; a measure of connectivity in vegetative and/or habitat conditions across a landscape.

Ground Cover. The percentage of material, other than bare ground, covering the land surface. It may include live and standing dead vegetation, litter, cobble, gravel, stones and bedrock. Ground cover plus bare ground would total 100 percent (BLM Technical Reference 4400-4).

Invasive. Describes a species which takes over a new habitat where it was not previously found, often to the detriment of species which were there before.

Invasive Species. A nonnative plant species that is capable of dominating over native or other nonnative plant species in such a way that it interferes with natural ecological processes of plant community functionality. If introduced into a plant community it does, or is likely to, cause economic harm, environmental harm, or harm to human health.

LANDFIRE Biophysical Setting Models. Predictive models developed under the LANDFIRE collaborative partnership of the USDA Forest Service, the Department of Interior, and the Nature Conservancy to describe how ecosystems function in relation to their environmental setting and various disturbances such as fire. Biophysical settings represent natural plant communities that would become established in later stages of successional development given natural ecological processes such as fire. Biophysical settings are matched one-to-one with vegetation succession models used to simulate historical reference conditions. The biophysical settings represent the vegetation that can potentially exist at a given site based on both the biophysical environment and an approximation of the historical fire regime (www.reo.gov/ecoshare/publications/documents/LANDFIRE_outputs.pdf).

Litter. The uppermost layer of organic debris on the soil surface; essentially the freshly fallen or slightly decomposed vegetal material (BLM Technical Reference 4400-4).

Maintenance of Desired Range of Conditions (Vegetation). Management of watersheds, allotments, or local sites that possess the desired plant communities in a manner to ensure continued survival and health of these desired communities. As used in the context of this RMP, maintenance activities typically focus on grazing management and other “passive” management tools as opposed to fire, chemical applications, seeding, or other “active treatment” management tools. It is important to emphasize that in dynamic natural systems, some type and degree of disturbance is generally necessary to maintain current conditions, whatever they may be.

Marsh. Flat, wet, treeless areas usually covered by standing water and supporting a native growth of grasses and grasslike plants.

Mechanical Treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Natural System. This refers to a biological, soil, and physical environment largely, but not necessarily entirely, controlled by natural processes rather than by intensive human activity, e.g., the comparison between rangelands and tilled agricultural croplands.

Noxious Weed. Any plant designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property.

Nutrient, Plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil, and carbon, hydrogen, and oxygen obtained from the air and water.

Old-growth. A stage that constitutes the potential plant community, characterized by large, old trees, and capable of existing on a site given the frequency of natural disturbance events. Identification of old-growth species is dependant on the forest/woodland type. In most forest/woodland stands, old-growth tree species have large diameters relative to average, and are resilient and able to withstand natural disturbance events (i.e., fire).

Overmature Woodland. A vegetation state whereby the woodland community has crossed a threshold into a state where the canopy cover exceeds optimum percentages and the herbaceous perennial understory has been reduced to rare or absent. In this state, tree density and fuel accumulation have reached the point of promoting large hot fires.

Overstory. The upper canopy or canopies of plants. Usually refers to trees, tall shrubs, and vines.

Phase. A descriptor used to describe multiple identifiable plant communities within a particular state of the state-and-transition model. Communities may shift over time in a reversible manner among phases in a state in response to climate, grazing, and numerous other disturbance factors. As vegetation communities shift among phases, the vegetation and soil maintain resilience to return with similar characteristics.

Plant Cover. 1) The plants or plant parts, living or dead, on the surface of the ground. Vegetative cover or herbage cover is composed of living plants and litter cover of dead parts of plants; 2) the area of ground cover by plants of one or more species.

Proper Functioning Condition. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filer sediment, capture bedload, and aid floodplain development; improve flood-water retention and groundwater recharge; develop root masses that stabilized streambank against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity (BLM Technical Reference 1737-9).

Range of Healthy Conditions (vegetation). The set of primary vegetation community characteristics that determine whether a given vegetation community is considered to be "healthy" with respect to the agency goals of ecological health and resilience. Ranges of healthy conditions are based primarily on composition of perennial species present in the overstory vegetation and the presence or absence of native perennial species in the herbaceous understory.

Resilience. The ability of a natural vegetation community to recover following a disturbance such as fire with recruitment of native plants in a manner that eventually leads back to the pre-disturbance condition. Resilient communities typically exhibit perennial herbaceous understory; non-resilient communities commonly exhibit no understory or understories dominated by invasive exotic species.

Resistance. The capability to stay near equilibrium conditions with less variation in ecological processes. Resistant plant communities accommodate more outside influences. Resilience and resistance determine the stability of a state or of the various phases within a state (Swanson 2005).

Riparian. Referring to or relating to areas adjacent to water or influenced by free water associated with streams or rivers on geologic surfaces occupying the lowest position of a watershed. Pertaining to, living or situated on, the banks of rivers and streams. 'Xeroriparian' refers to being situated on dry washes (ephemeral streams).

Seral Stage. The developmental phase of a forest stand or rangeland with characteristic structure and plant species composition.

Scrub. Refers to a stand of vegetation characterized by thick growth of dwarf or stunted trees and shrubs and a poor soil.

Shrub. A low woody plant.

Site Preparation. Any action taken in conjunction with a reforest effort (natural or artificial) to create an environment that is favorable for survival of suitable vegetation during the first growing season. This environment can be created by altering ground cover, soil, or microsite conditions through using biological, mechanical, or manual clearing, prescribed burns, herbicides, or a combination of methods.

Slash. The branches, bark, treetops, reject logs, and broken or uprooted trees left on the ground after logging.

State. A descriptor used to describe a recognizable, resistant, and resilient complex of soil and vegetation for an ecological site. The plant communities within a state are different from those of other states in the state-and-transition model. When a vegetation community loses resilience and characteristic ecological processes, it crosses a threshold into another state. Such transitions are not readily reversible like the shift among phases within a state.

State and Transition Models. Models that diagram the variety of stable states for a given ecological site. Such models identify the potential array of disturbance factors affecting vegetation communities for the ecological site and are used to explain and predict vegetation changes in response to these factors. Such responses may involve a transition from one state to a different state on the ecological site.

Threshold. A point of irreversible transition to a new state. After the transition, significant management effort (e.g., seeding, herbicide control, fire control, etc.) is needed to restore the ecological processes of the other state (Swanson 2005).

Transition. The trajectory of system change between states that lead to the establishment of a new state. The transition may be reversible for a time and may become irreversible after the new state has been reached. A transition involves the loss or significant change of ecological processes such as soil capture of water, reproduction of key species or species groups, resilience after fire, etc. Lost or changed processes do not recover without intervention (Swanson 2005).

Vegetation Manipulation. Alteration of present vegetation by using fire, plowing, or other means to manipulate natural succession trends.

Weed. A plant considered undesirable, unattractive, or troublesome, usually introduced and growing without intentional cultivation.

Wetlands. Areas characterized by soils that are usually saturated or ponded, i.e., hydric soils, that support mostly water-loving plants (hydrophytic plants).

Wilding. A plant growing uncultivated in the wild either as a native or an escape.

Woodland. A forest community occupied primarily by noncommercial species such as juniper, mountain mahogany, or aspen.

WATER

Aquifer. A body of rock that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

Beneficial Use. Any of various uses of water in an area. Water may be for agricultural, domestic, or industrial use, fish spawning, recreation, wildlife habitat, or other uses.

Channeled. Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed have created deeply incised cuts, either active or abandoned, in alluvial material.

Drainage, Surface. Runoff, or surface flow of water, from an area.

Drawdown. The lowering of the water level in a well as a result of withdrawal; the reduction in head at a point caused by the withdrawal of water from an aquifer.

Ephemeral Stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no continuous supply from melting snow or other source, and its channel is above the water table at all times.

Flood Plain. A nearly level alluvial plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of the stream.

Groundwater. Subsurface water that is in the zone of saturation. The top surface of the groundwater is the "water table." Source of water for wells, seepage, springs.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Infiltration. The flow of a fluid into a substance through pores or small openings. It connotes flow into a substance in contradistinction to the word percolation. The process by which water seeps into a soil, as influenced by soil texture, aspect, and vegetation cover.

Infiltration Rate. Maximum rate at which soil under specified conditions can absorb rain or shallow impounded water, expressed in quantity of water absorbed by the soil per unit of time, e.g., inches/hour.

Interior Drainage. Streams with no outlet to the sea.

Intermittent Stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives groundwater discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Microsiemens Per Centimeter. A unit of measure for specific or electrical conductivity of water. Higher values reflect greater levels of dissolved conductors (e.g., sodium, calcium, or magnesium salts).

Percolation. The flow of a liquid through a porous substance.

Perennial Stream. A stream in which water is present during all seasons of the year.

Perennial Yield. Water that is available in a shallow alluvial aquifer that can be withdrawn without creating substantial drawdown in the aquifer's water table.

Pluvial Lake. A lake formed during a period of exceptionally high rainfall (such as during a time of glacial advance during the Pleistocene epoch) and now either extinct or existing as a remnant, such as Lake Bonneville.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called groundwater runoff or seepage flow from groundwater.

Seep. Wet areas, normally not flowing, arising from an underground water source.

Specific Conductance. A measurement that indicates the capacity of a sample of water to transmit an electrical current, which is associated with the concentration of ionized substances in the water.

Spring. Flowing water originating from an underground source.

Stream Channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Total Dissolved Solids. Total amount of dissolved material, organic or inorganic, contained in a sample of water.

Wellhead Protection Area. The land surface area in which activities and land uses must be managed to protect the underlying ground water. A wellhead protection area is designated to protect the groundwater flowing to a well or group of wells and is represented on the land surface generally as a circular or elliptical shape around the well. In some cases, it also may be necessary to manage the activities in a recharge zone located some distance from the well.

WATERSHED

Ecological Site Description – Ecological Site Inventory is the BLM's approved and accepted rangeland vegetation/soil survey method based on current year's vegetation growth, and an Order 3 soil survey. The BLM follows the survey processes and techniques defined in the Natural Resources Conservation Service (NRCS) "National Range and Pasture Handbook", with some slight adaptations to BLM's needs.

In order to properly inventory, assess, and manage the conditions of rangelands they must be divided into basic units of study. On rangelands and some forest lands this is called an ecological site. An ecological site, according to the National Range and Pasture Handbook, is

...a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation....An ecological site is the product of all the environmental factors responsible for its development, and it has a set of key characteristics that are included in the ecological site description. Ecological sites have characteristic soils that have developed over time throughout the soil development process. The factors of soil development are parent material, climate, living organisms, topography or landscape position, and time. An ecological site has a characteristic hydrology, particularly infiltration and runoff that has developed over time. The development of the hydrology is influenced by development of the soil and plant community. An ecological site has evolved a characteristic plant community kind (cool season, warm season, grassland, shrub-grass, sedge meadow) and amount of vegetation. The development of the vegetation, the soil, and the hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species, or in total production.

Hydrologic Balance. The balance between hydrological inputs (infiltration of incident precipitation, run-on) and hydrological outputs (run-off, deep drainage) for an ecological site.

Hydrologic Subbasins. See watershed.

Hydrologic Unit. A geographic area representing part or all of a surface drainage basin or distinct hydrologic feature.

REGAP. Re-mapping under the Gap Analysis Program. The purpose of the National Gap Analysis Program (GAP) is to provide broad geographic information on the status of ordinary species (those not threatened with extinction or naturally rare) and their habitats in order to provide land managers, planners, scientists, and policy makers with the information they need to make better-informed decisions. Existing natural vegetation is mapped from satellite imagery and other records using the National Vegetation Classification System to the level of dominant or co-dominant plant species.

Restoration. Holistic actions taken to modify an ecological system to achieve desired, healthy, and functioning conditions and processes. Generally refers to the process of enabling the system to resume its resiliency to disturbances.

Site Potential. A measure of resource availability based on interactions among soils, climate, hydrology, and vegetation.

Watershed. 1) A total area of land above a given point on a waterway that contributes runoff water to the flow at that point; 2) A major subdivision of a drainage basin.

WILD HORSES

Appropriate Management Level. The optimum number of wild horses that provides a thriving natural ecological balance on the public range.

Band. A group of wild horses running together or a lone wild horse.

Herd. One or more wild horse bands using the same general area.

Herd Area. Herd Areas are limited to areas of the public lands identified as being habitat used by wild horses and burros at the time of the passage of the Wild Horse and Burro Act, as amended (16 U.S.C. 1331-1340). Herd Area boundaries may only be changed when it is determined that: 1) areas once listed as Herd Areas are later found to be used only by privately owned horses or burros, or 2) the Herd Area Boundary does not correctly portray where wild horses and burros were found in 1971.

Herd Management Area. Areas within Herd Areas that are designated for management of wild horses as one of the multiple uses, where the long term maintenance and management of wild horses can occur due to adequate resources.

Herd Management Area Plan. A plan that prescribes measures for the protection, management, and control of wild horses and their habitat on one or more herd management areas, in conformance with decisions made in approved management framework or resource management plans.

Wild Horses. Unbranded and unclaimed horses that use Public land as all or part of their habitat, or that have been removed from such land by an Authorized Officer but have not lost their status under Section 3 of the “Wild Free-Roaming Horse and Burro Act.”

WILDERNESS

Designated Wilderness. An area designated by Congress and defined in Section 2(c) of the Wilderness Act of 1964 as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined as an area of undeveloped Federal land retaining it primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which 1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; 2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; 3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and 4) also may contain ecological, geological, or other features of scientific, educational, scenic, or historical values.

Wilderness Study Area. A roadless area of 5,000 acres or more or a roadless island that has been inventoried and found to possess wilderness characteristics as described in Section 2(c) of the Wilderness Act of 1964.

WILDLIFE

Connectivity. A network of habitat patches linked by areas or corridors of like habitat; it affects how organisms can move through the landscape.

Cover. Any form of environmental protection that helps an animal stay alive (mainly shelter from weather and concealment from predators); any vegetation material that overlies the soil surface and protects it against erosion.

Critical Habitat. Specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation.

Crucial Habitat. Wildlife habitat vital to the existence of a particular wildlife species during a certain season of the year or period of its life.

Habitat Degradation. The pattern of changes in vegetation and other habitat components that result in loss of food supplies, water sources, cover quality, or space for a wildlife species.

Habitat Fragmentation. The division of large contiguous blocks of wildlife habitat into isolated smaller parcels separated by distances great enough to discourage wildlife movement between parcels.

Lek. An assembly area where birds, especially sage grouse, carry on display and courtship behavior.

Lek, Active. A lek that had two or more birds present during at least one of three or more visitations in a given breeding season. For a strutting ground to attain this status it must also have had two or more birds present during at least 2 years in a 5-year period (Connelly et al. 2003).

Occupied Isolated Habitat. Isolated segments of discontinuous wildlife habitat occupied by an individual wildlife species in circumstances where the habitat discontinuities prevent migration of excess population members into additional habitat segments.

Occupied Source Habitat. Wildlife habitat occupied by an individual wildlife species at population levels and under circumstances where members of the population may migrate into adjoining unoccupied habitats to expand the overall species population.

Priority Habitat. A priority habitat may be described by a unique vegetation type or by a dominant plant species that is of primary importance to priority fish and wildlife. A priority habitat may also be described by a successional stage (such as, old growth and mature forests). Alternatively, a priority habitat may consist of a specific habitat element (such as a spring, stream, or cave) of key value to priority fish and wildlife. A priority habitat may contain priority and non-priority fish and wildlife.

Priority Species. A species requiring protective measures and/or management guidelines to ensure their persistence at genetically viable population levels and recognized by the BLM as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age.

Thermal Cover. Cover used by animals to protect them against weather.

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